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SITUATIONAL DETERMINANTS OF KINSHIP TERMINOLOGY[1]

MARC J. SWARTZ

THE PURPOSE of this paper is to show that in one case, at least, the significance of kinship terms cannot be understood if the terms are viewed as nothing more than statements of genealogical relationship. Leach has advanced the same position in a recent essay at the conclusion of which he says:

> In this paper I have sought to demonstrate the advantage of approaching the analysis of a kinship terminology without any preconceived assumption that the "primary meaning" of this or that particular word must necessarily be defined by genealogy. My general standpoint is that kinship terms are category words by means of which the individual is taught to recognize the significant groupings in the social structure into which he is born. Until we as anthropologists fully understand the meaning of that social structure we can hardly hope to understand what the various category words "mean."[2]

The behavioral importance of the fact that kinship terms are "category words by means of which the significant groupings" are recognized is, of course, that the individual will be able to deal with the people in these groupings with a limited number of attitudes and actions instead of having to treat each one as a wholly unique problem. Obviously this not only simplifies the individual's relations with his relatives but also tends to homogenize behavior throughout the society.

Granting that kinship terms are category words and that they play a significant role in behavior, the problem is to discover the basis for the formation of the kinship categories. As Leach suggests, many writers treat this question as though it could be answered in strictly genealogical terms. These anthropologists maintain,

1 A somewhat different form of this paper was read at the 1959 annual meeting of the American Anthropological Association in Mexico City. I am indebted to John L. Fischer, Mark Benny, Gerald Handel, McKim Marriot, and Robert Weiss for their comments and suggestions.

2 Leach, 1958, p. 145.

in effect, that kinsmen are grouped together and separated according to the eight principles of kinship classification advanced by Kroeber.[3] If the meaning of a kinship term can be said to be the common qualities of those to whom the term applies, then these writers look for a term's meaning only in such qualities as sex, type of relationship to speaker, generation, and so on.

There is no intention here of denying the importance of the sort of qualities abstracted by Kroeber in understanding the meaning of kin terms. Rather the contention is that there are kinship categories whose meaning cannot be understood without recognizing that these qualities are supplemented with other, non-genealogical traits. Leach[4] has shown this to be true in the Trobriands as concerns the term *tabu*. This paper will demonstrate that it is also true in another society.

THE TERM PWI

More specifically, we will examine a single term, *pwi*, one of the six basic terms applied to consanguineal relatives on Romónum Island in Truk atoll. At first glance; there seems to be no difficulty in understanding what this term means. The term is applied to true siblings of speaker's sex and to members of speaker's matrilineage who are of his generation and sex. In addition, since on Truk one stands in the relationship of "child" to all the members of father's matrilineage, the term *pwi* is used for all those of same sex who stand in this same relationship. Thus FaMoBr's children, FaSiSo's children, and father's children by other marriages are also classed as *pwi*. Apparently, the term *pwi* can be seen as the name of a category composed of people of own sex and own generation who stand in certain genealogical relationships. The only complication is that the definition of "own generation" with respect to patrilateral relatives is in terms of being an offspring of the men of father's matrilineage instead of biological generation. This, however, is easily accounted for in terms of strictly genealogical criteria of the sort advanced by Kroeber.

A more serious complication, however, appears with the fact that all the same sex members of the matrilineage treat and refer to each other as *pwi* under certain circumstances. Goodenough[5] points out that when the matrilineage functions as a property-holding group it is conceived of as composed of siblings and in this context the term *pwi* is used for all those of same sex in the matrilineage even though they are of a different generation and are not referred to by this term in other contexts.

The usage of the term *pwi* clearly cannot be understood in terms of genealogical principles alone. In the first place, it involves classifying the same person in two

3 Kroeber, 1909, p. 176.
4 Leach, 1958.
5 Goodenough, 1951, pp. 31-32.

different ways so that when the matrilineage operates as a property-holding group MoBr is classed as *pwi* or a variant of *pwi* indicating that he is an older pwi. In all other contexts MoBr is classified by another term, *samei*,[6] together with a number of people quite different from those with whom he is grouped when he is *pwi*. In the second place, even if we overlook the difficulty and confusion involved in making a dual classification on genealogical grounds, the criteria for the classification are clearly not genealogical but situational. A MoBr is taken out of the class *samei* and put into the class *pwi* not by tracing the relationship to him in a different way but by seeing the relationship in a different context, namely that of property-holding. In the same way a SiSo is taken from the class of relatives *nei* and grouped as *pwi*.

The resolution to this problem seems a simple one. The class *pwi* is made up of those who stand in a certain genealogical position *and* also of those with whom one holds property in common and this last criterion is so important that it can over-ride other criteria. Before accepting this solution, let us examine another dual classification involving the term *pwi*.

The second case is a bit more involved and although Goodenough does not appear actually to have encountered it as I did, he mentions it as a theoretical possibility.[7] This dual usage was brought home to me by the following incident. I was standing on a path with a friend of mine when a man approached us. After the man had passed, I idly asked my friend what relation he was to the passer-by. The question was idle because I had only a few days before collected a genealogy showing the man to be my friend's FaSiSo and thus, according to the Crow system present on Truk, my friend's *samei*. My friend surprised me, however, by saying that the man was his *pwi*. Thinking that he might be confused, I asked him if the man were not the son of his father's sister. He replied that this was so and that therefore the man was his *pwi*. I was unable to bring my friend to admit that the man could under any circumstances be *samei*.

The matter rested for two weeks until a group of men, including my intransigent friend, were in my house discussing property rights and inheritance. During the discussion, the man who passed us on the path was mentioned and my friend referred to him as *samei*. I immediately taxed him with his earlier denial of this relationship and reminded him he had told me that the man was *pwi*. After much thought, my friend said that perhaps sometimes a FaSiSo was like a *pwi* and at other times he was like a *samei*. The other men present agreed with him, but none could explain how this could be.

6 The term *samei* is the first person possessive form of a word whose root is *sam*. *Pwi* is both the root and first person possessive.

7 Goodenough, 1959, p. 96.

SOLIDARITY AND CONTEXT

The second dual classification of kinsmen is similar to the first in two ways. That is, both cases involve shifting a relative into and out of the category *pwi* and the context for both shifts involves property. An important difference in the two cases, however, is that MoBr, SiSo, and other members of the matrilineage are put *into* the category *pwi* when property is at issue, while FaSiSo is taken *out* of this category when the situation is centered about property.

In order to understand the concept *pwi* it is obvious that it will be necessary to know something of the regulations concerning the central factor of the shifting we have seen, namely property. We already know that the matrilineage jointly holds property and it remains only to be pointed out that the members of a matrilineage do not inherit from one another. They each have the right to use lineage property by virtue of their membership in the group, but since the lineage as a corporation has title to all its property and retains it until the last surviving member dies, there is no inheritance within the lineage. When the last surviving member of a lineage does die, however, the lineage's property is inherited by the children of the men in the group. Thus one is a potential heir with respect to the property of one's FaSiSo, but not with respect to one's MoBr.

The earlier suggestion that *pwi* means people who stand in a certain genealogical relationship plus those others with whom one holds property in common when property is at issue can now be modified. If the term *pwi* is taken to mean "person whose interests and mine coincide," its meaning can be understood. In the context of property-holding, one's interests coincide with those of MoBr and other lineage members and in this situation it is useful to stress the solidarity of the property-holding group. In the context of property-holding, one's interests do not coincide with those of FaSiSo, for he uses his lineage's property and this is quite different from yours. By using the parent term *samei* for him, his status as someone to be inherited from is stressed. Outside the issue of property, one's interests do coincide with those of the FaSiSo in that he is generally of the same age and, still outside the property context, the man who is *samei* to him (i.e. his MoBr) is also *samei* to oneself, since this term also applies to true father.

SUMMARY AND CONCLUSIONS

The use of the term *pwi* on Romónum cannot be understood as a simple grouping together of individuals who stand in a common genealogical relationship to an individual, and the principles explaining kinship classification in this way must be supplemented by others. It has been shown that the group of individuals subsumed under the category *pwi* varies according to the situation in which the concept is

used and that this variation can be understood when the term is seen as an assertion of common interest.

The grouping together of people under kinship terms makes it possible to deal with a number of important individuals according to a restricted number of attitudes and actions. This has a great many advantages both for the individual and the society, but it can lead to a certain amount of inflexibility. If the attitudes and behavior are at all specific—and much of their value depends on their being so—then it is difficult to play more than one role toward a given kinsman without going outside the kinship system. Sometimes, however, more than one role is called for and on Truk this is accomplished by being able to shift the kin category membership.

Given the possibility of such shifting, the kin terms cannot be taken to mean only a certain genealogical relationship. The properties which people have that bring them to be classed together are not only sex, age, generation, and so on, but also their standing in various situations or contexts, and to understand the use of these terms the situational determinants must be analyzed.

More generally, although there is no contention here that all cultures provide for shifting classification of kinsmen, the importance of non-genealogical criteria in kin grouping is probably quite general. Almost all societies offer the possibility of tracing the relationship to some individuals in alternative ways. For example, ego may be related to someone both affinally and consanguineally but will number the person as either a blood relative or an affine, but not both. The decision as to which of alternative types of relationship to stress cannot be made on genealogical grounds and will involve considerations similar to those discussed in this paper.

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The University of Chicago
Chicago, Illinois

NEPALESE MUSICAL INSTRUMENTS*

THOMAS O. BALLINGER AND PURNA HARSHA BAJRACHARYA

THIS PAPER is the result of a study made during 1956-1958 in Kathmandu, Nepal. Its purpose is to discuss and describe in particular the following aspects of Nepalese musical instruments. (1) An examination of and collation with the first known comprehensive list of instruments as reported by Campbell as well as a comparison with the later listing of Wright.[1] (2) A more detailed description of each instrument, for what purpose it may be played and the social and religious conditions that permit or deny its use. (3) A listing of musical groups (Bajas) and the instrumentation that comprises such ensembles.

For the most part the instruments played by Newari musicians are made by them in the villages of the Valley. The *sarangi,* a rather crude string instrument, is an example of this. Wind instruments, as in earlier times, continue to be made by the carpenter and the metal worker castes (Kasthaker and Silpaker). Percussion instruments are also produced by the Kasthakers as well as by the lowest of the untouchables, the Kulu caste. In Nepal, social caste prohibition governs the playing of certain musical instruments. The Kulus, for example, are responsible for making and testing particular kinds of percussion instruments. Social convention, however, does not allow this caste the privilege of actually playing the instruments they make. The coppersmith caste makes and tests the *narasingha,* a copper trumpet. They may not use this instrument, however, for social or for religious occasions. Playing the *narasingha* is the exclusive prerogative of the Damai caste.

The professional musician, so called, is one who plays whenever occasion demands. Such musicians (*gayana*) are always members of the lower castes. Today, however, it is not uncommon for non-professional musicians of a higher caste to participate occasionally in musical activities. Such innovation reflects the slow change the caste system is undergoing in Nepal. The Nepali are certainly a society that draws richly upon the art form of music as a means of individual and group expression. Participation in any form of instrumentation, which embraces the examples described in this study and involving players other than members of the lower castes, would never have been permitted until recent years.

* The authors wish to thank both Dr Margaret Fisher and Dr Leo E. Rose of the Center of South Asian Studies at the University of California at Berkeley, for their interest and the time they generously gave in reading this paper. Their suggested changes and additional information constitute a major contribution.

1 A. Campbell, *Notes on the Musical Instruments and Agricultural and other Instruments of the Nepalese* (Journal, Asiatic Society of Bengal, vol. 6, pp. 953-963, 1837); Daniel Wright, *History of Nepal* (Cambridge: University Press, 1877).

Original designs of Nepali instruments were in all probability created in India and found their way north across the plains of that vast land many years ago. Contemporary designs clearly show the use of indigenous materials. In so far as there has been little change in the religious and social institutions for many years, the effect on instrument design has been negligible.

It would seem appropriate, in conclusion to these introductory remarks, to bring to the reader's attention the existence of other musical instruments currently in use in Nepal and in particular in the Valley. European band instruments, as an example, have become standard equipment for the musical organization of the military. Their design and antiquated appearance would suggest they were introduced into Nepal about the turn of the century. The acquisition and subsequent use of such instruments, as well as European and American martial music, is undoubtedly the result of the influence of British military units during the colonial period in India. It should be noted, however, that Jang Bahadur had introduced French uniforms and a French bandmaster into Nepal as early as 1851-52. The *tabla* and *sitar*, two important Indian instruments, are used in Nepal to play the classical Ragas. Both the harmonium, a portable organ-like instrument, and the western violin have in recent time been added to Newar musical groups.

While this paper intends to discuss only those instruments developed and used by the Newar[2] of the Kathmandu Valley, or more properly the Valley of Nepal, the writers are well aware of a need for a comprehensive study of Nepalese and Newari music, per se. The urgency for such immediate investigation is better understood in light of the increasing danger of cultural influence through recent contact with the West. In particular, unwritten Newari ballads, sung in a rapidly disappearing classical dialect, are within serious danger of extinction as new social and religious values replace the old.

In comparing our investigation with the two previous studies, it should be brought to the reader's attention that the difference in the spelling of the same words may possibly be explained in the following manner. During the time the earlier research was undertaken, movement in the valley was restricted. Familiarization with the native population was not encouraged by the ruling faction. Opportunities for obtaining information were obviously limited. The Nepalese have a propensity to please the investigator, relating very significantly the answer to the

2 For several centuries, prior to 1768 when the Valley was overrun and conquered by the *Gorkha* King Prithni Narayan, the Newar existed as an independent nation. Three kingdoms—Kantipur (Kathmandu), Bhaktapur (Bhadgaon), and Lalitpur (Patan)—were all ruled by princes of the Malla family until their unity under the House of *Gorkha*. Today, Newars still constitute the main population of the Valley, a figure numbering some 415,761 people (July 1954 Census Report, United Nations Economic Survey Mission, Kathmandu, Nepal).

TABLE 1

Collation with Campbell's and Wright's listing of Nepalese musical instruments

Campbell (—1837)	*Wright (—1877)*	*Ballinger-Bajracharya (1956-1958)*
	String Instruments	
Saringi	Sarangi	Sarangi
Sitar[3]	Sitar	Sitar
(no record)	Bina or bin	Veena
	Wind Instruments	
Bansuli	Bansri	×
Beh or krishna-beh	Baya	Baye
(no record)	Hong	(no record)
(no record)	Kahal	Kaha
(no record)	Karnal	(no record)
Mohalli	Mohali	Mohali
Murilli or beaugh	×	×
Nag-pheni or turi[4]	Narsingha	Narasingha
(no record)	Ngeku	Ngeku
Singa or nar singha[5]	(no record)	Paita
Phunga	Ponga	Ponga
	Percussion Instruments (Cymbals)	
(Campbell only gives a general description of this category. No specific "cymbals" are named.)	Babhu[6]	×
	Bhusya	Bhusya
	Chhusya	Chhusya
	Kwalimili	Khwalimali
	Manjuri	Taa
	Percussion Instruments (Drums)	
(no record)	(no record)	Damaha
(no record)	Damaru	Damaru
(no record)	Dhak	Dha
Dhol	×	×
Dholuck	Dholak	Dholak
(no record)	Dhyamaya	Dhyamaya
(no record)	Dondhon	Dhyangro
(no record)	Dongokhin	Donga
(no record)	Khin	Khin
(no record)	Konchakhin	Konchakhin
(no record)	Madal	Madal (Dhime)
(no record)	Mridang[7]	Mridanga

(no record)	Nayakhin	Nayekhin
(no record)	Panchtalkhin[8]	Panchatalakhin
(no record)	(no record)	Paschima
(no record)	Tamra	Tamar
	Miscellaneous Instruments	
(no record)	Bamtal[9]	×
(no record)	(no record)	Damfu
(no record)	Kartal[10]	(no record)
(no record)	Khanjan	Khanjari
(no record)	Tainai	Tainai

3 The classical instrument of India.

4 Campbell's description of the *nag-pheni*, or *turi*, is identical with that of the *narasingha*.

5 Campbell is incorrect in his description of the *singha* or *nar singha*. His account accurately describes the *paita*.

6 This instrument is identical to the *khwalimali*, which Wright lists as a separate instrument. It is also called a *jhyali*.

7 *Mridang;* also called the *pakhauj* (Wright).

8 *Panchatalakhin* (*panchtalkhin*, i.e.: Wright); also known in the valley as a *kotah*.

9 Wright lists a *bamtal* as a small tambourine. His brief description suggests its similarity to the *damfu*.

10 Wright lists the *kartal* as "a pair of castanets." We found no such percussion instrument in use during our study.

way in which the question is asked. Validation does not come easy under such conditions.

Our opportunity of unrestricted movement increased the potential but, with the above remaining situations still operating, by no means raised the validation criterion.

A distinct advantage, in the case of this most recent investigation, is the heritage of the co-author. Mr Bajracharya is a Newar. Finally, a hypothesis of one of the authors (Ballinger) considers the misspelling of words to have occurred from initial contact with new sounds. Newari, which in the main is the language spoken by the musicians, belongs to the Tibeto-Burman group. British officials, assigned to the remote residency in Kathmandu were, for the most part, Sanskrit- or Hindi-oriented linguistically. The problem of communication and the phonetic translation of new sounds possibly could explain spelling differences in the names of the same instruments mentioned in the three independent reports. The use of ×, in the columns listing the two later studies, indicates that the authors are aware that the instrument has been recorded and may be listed in another position in the column (see footnotes).

STRING INSTRUMENTS

(1) *Sarangi:*

The *sarangi,* a string instrument made of wood, is approximately two feet in length. In shape it somewhat resembles a cello, the Western musical instrument. The lower part of the front of this instrument is covered with skin while the upper portion is uncovered and open. It has four strings, three made of sheep gut while the remaining one is made of copper. The strings are firmly attached to the bottom; however, at the top they may be tightened (or loosened) by means of four movable control knobs.

Unlike the *veena,* the *sarangi* is played with a bow rather than by the fingers. The bow is a piece of reed or a stick to which are attached fine hairs from the tail of a horse. The instrument is held in the left hand and bowed with the right. The back of the *sarangi* is held against the body of the musician, the bowing position being waist high. The musician generally stands when playing (see Fig. 1).

The *sarangi* is played by the members of the Gaine caste. It is played alone and is never used in a processional or religious function. It does not enjoy professional status as an instrument.

(2) *Veena:*

The *veena* is larger than the *sarangi,* being approximately four feet in length, and made of wood. Generally the top is carved in the shape of a lion's head while the body of the instrument is decorated with ivory insets. This instrument has seven metal strings which can be tightened by means of knobs located near the top. The desired tone is controlled by the tension placed on the strings. In its historical context the *veena* was believed to have been created by Sri Saraswati, the Goddess of Learning, and consequently it is usually identified as an instrument of women. Today, however, it is played by both men and women.

The musician sits on the floor while playing the *veena.* He holds it with both hands and slightly bends it by applying pressure with his left hand while the bottom end is placed tightly against his right thigh. He wears a pointed ring *(nakh)* on his right index finger with which he plucks the strings. The left hand moves up and down the neck and presses the strings to obtain the desired notation.

This instrument is played by members of all castes and there is no social prohibition in this regard. Generally, it is played in the company of a *tabla* (drum) although on occasions it may be played alone. The *veena* is considered to be a Classical instrument and is similar in design and sound to the more familiar Indian *sitar.* The music played is quite like the Ragas of India; however, Ragas of Nepalese origin are claimed.

WIND INSTRUMENTS

(3) *Baye:*

One of the most common musical instruments in Nepal is a reed flute called the *baye*. It is also known as a *basuri* or a *murali*. This wind instrument is usually made of bamboo; however, today metal flutes are also seen. A legend states that this instrument was introduced by Lord Krishna. It is generally played alone. On occasions, however, it may be played with the *konchakhin*, *taa*, or other instruments. Members of any caste may play the *baye*. (Campbell also names this instrument a *beaugh*, claiming this to be a Newari term.)

(4) *Kaha:*

The *kaha* consists of a pair of copper trumpets over six feet in length and similar in shape to the *ponga*. The *kaha* and the *ponga* are always played in pairs by the Jyapu castes for their religious and social functions. These instruments always precede the procession. The *kaha*, accompanied by a *nayekhin*, is also played in funeral processions. The *kaha* is used by the Jyapu castes of Patan while the *ponga* is played by both the Jyapu and Manandhar castes of Kathmandu.

(5) *Mohali:*

The *mohali* resembles a hollow reed and is about eighteen inches in length. It is decorated with brass rings and is slightly curved. At the top a mouth piece is attached to the body of the instrument. The bottom has a brass section similar in shape to the large half of a funnel. The playing of a melody is controlled by the movement of the fingers on the eight holes.

This instrument is peculiar to the Kusale (Jogi) and the Damai castes. The Damai caste play the *mohali* along with the *damlaha*, *tamar*, *jhyali* and several other instruments. The Kusale play it with various instruments depending upon (1) the kind of music, or (2) the occasion. For example, in the month of Baisakha (May), during the Diwali festival, it is played as a solo instrument by the Kusale. During the marriage ceremony, it is accompanied by the *dholak* and *khwalimali*. For religious dances (such as the Mahakali) it is played with the *paschima* and *khwalimali*. This instrument is only played on pleasant and joyful occasions. (Campbell describes the *mohali* as a somewhat more primitive instrument than the one found today. His description is most interesting.)

(6) *Narasingha:*

The *narasingha* is a copper trumpet six feet in length. Its shape resembles that of an old European coach horn. Though it is only used by the members of the Damai caste it is best known in the villages of the Kathmandu Valley. Generally
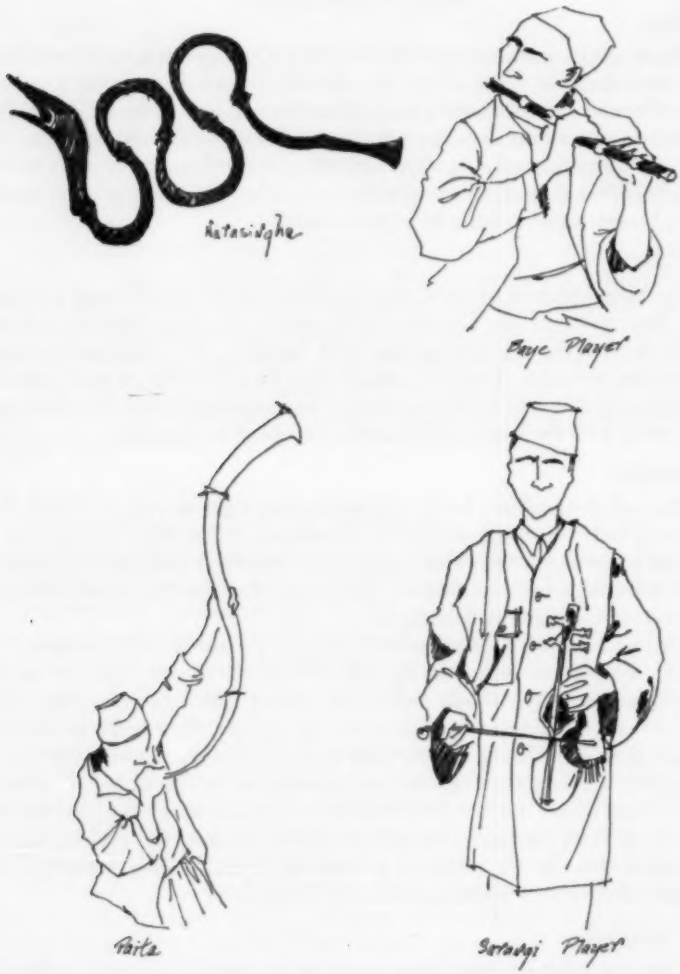
FIG. 1. Nepalese string and wind instruments (Drawings by Marjolaine Grant).

it is used in marriage processions and festivals. Its name, (nara) singha, meaning lion, is derived from the lion's head carved at the top of this instrument.

Another design variation of the same instrument takes the form of a snake. This particular instrument is played by the Sanyasis and Fakirs.

(7) *Ngeku:*

This is a wind instrument made from the horn of a buffalo. It is generally believed that this was the first wind instrument used in Nepal. Usually it is sounded in the temples during the month of Shravan by members of the Sakyabhikshu (Bade) or the Manandhar castes. It is frequently accompanied by the *dha, bhusya,* and *taa.* A legend found in the Buddhist manuscript "Sringa Bhedu" tells the following tale: A woman who had lost her husband was much grieved and did not know what to do. She took shelter in a Chaitya where she worshipped daily by sounding the *ngeku.* One day her husband emerged from the horn. Today, members of a Buddhist family in which a death has recently occurred, will go to Swayambunath Temple during the month of Shravan (August) and ask the Bades Sakyabhikshu to play on the *ngeku* in the name of the deceased. Every year in the city of Patan there is a festival in which this instrument plays an important role. On the second day of the dark half of the moon, in the month of Shravan, a procession is held in Patan at which time Buddhist devotees go through the Viharas (monasteries) playing upon various instruments. The *ngeku* is among those played during this occasion.

(8) *Paita:*

This instrument is a copper trumpet over three feet in length. It consists of five separate sections which are fitted and joined together, the bottom being considerably wider than the blowing end. Unlike many other similar wind instruments, there are no holes which may be fingered for the purpose of controlling musical sounds. Such changes are made entirely by the movement of the tongue. Five *paitas* always play together in a group and are accompanied by the *kotah, taa,* and *babhu.* This instrument is used only by the Gubhaju, Sakyabhikshu, and Tuladhar castes. The *paita* follows processions on religious occasions.

(9) *Ponga:*

This is a copper trumpet some three or more feet in length. It is long and straight and when assembled is complete in six sections. This instrument is widest at the base, graduating in scale to the mouthpiece where its bore is an approximate $^1/_{16}$ to $^1/_8$ inch in diameter. The *ponga* has no holes with which to control musical tones and, like the *paita,* this is done by the movement of the player's

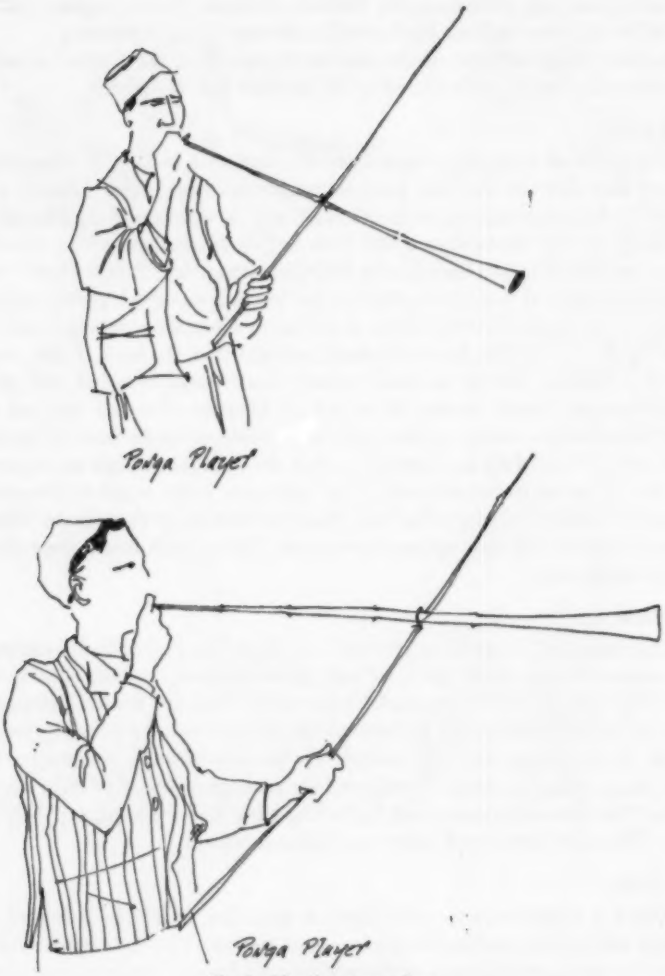

FIG. 2. Nepalese *ponga* player.

tongue. These horns are always played in pairs and are accompanied by the *dhyamaya, bhusya* and the *tainai*. Only members of the Jyapu and Manandhar castes play this instrument. The fragility of the *ponga*, due to its slender design, requires additional support. This is furnished in the form of a long stick or light pole which is attached near the wide end of the trumpet, the other end being held in the free hand of the player (see Fig. 2). (Campbell gives an interesting subjective description of this instrument, though typical of descriptive content at that time.

PERCUSSION INSTRUMENTS (CYMBALS)

(10) *Bhusya:*

The *bhusya* is a pair of bronze cymbals approximately one foot in diameter. It is always played in the company of other instruments, i.e. *dhak, dhyamaya, dongakhin, tainai* and *ponga*.

(11) *Chhusya:*

A pair of bronze cymbals, six to eight inches in diameter, is called the *chhusya*. It is always played with the *nayekhin*.

(12) *Khwalimali (Babhu):*

The *khwalimali* is a pair of small bronze cymbals five inches in diameter. These are played with various types of the *khin* (drum). In addition, this instrument is also played with the *dholak* and the *taa*. The *khwalimali* is also known by the name *babhu*.

(13) *Taa (Manjuri):*

The *taa* is a pair of bronze cymbals, two inches in diameter. These cymbals are thicker and somewhat smaller than the *khwalimali*. They are usually played as an accompaniment to different wind and percussion instruments such as the *dha, dongakhin, konchakhin, khin, paschima, bhusya, khwalimali, paita,* and others. The members of any caste, except the untouchables, may play the *taa* during religious and social functions.

PERCUSSION INSTRUMENTS (DRUMS)[9]

(14) *Damaha:*

The *damaha* is a percussion instrument having a flat top and a rounded bottom. It is made of clay or copper, with the top (head) covered with skin. The drum head

9 It should be noted that the surface of many of the local instruments is often covered with a black coating known as *khav*. This is particularly true in the case of the drums. Khav is made with charcoal dust or carbon particles left over from forging operations. This residue is then mixed with a glue solution obtained from boiling rice. Khav is applied to the surface of the instru-

can then be tightened by means of thongs. A leather strip may be attached to this instrument so that it may be hung around the shoulder of the drummer. It is played by beating the head with a stick. It is used in the company of the *tamar, khwalimali* and the *sahanai*. It is played during the marriage ceremony and for religious rituals. This instrument is played only by the members of the Damai caste. In the Kathmandu Valley there are very large *damahas (nagaras)* in each of the ancient Durbar squares located in the three main cities of Kathmandu, Patan, and Bhadgaon. The largest of these is six feet, six inches in diameter, and may be found in the Kathmandu Durbar square. Such instruments, as the above three examples, are made of copper plates.

(15) *Damaru:*

This instrument is a small hand drum shaped like an hour-glass. It may be made of wood, clay or metal. Both ends are covered with skin. Two small balls of leather or wax are tied on each side with a thread. When shaken, a sound is made by the balls striking the tightened skin on each end (head). In the past the *damaru* was played alone. Today, however, it is sometimes accompanied by other instruments. According to a legend the *damaru* was created by Lord Shiva. Today this relationship may still be observed in the Kathmandu Valley. From the month of Mangasir (November) until the end of Chaitra (March) a member of the Kusale caste, disguised as Shiva, goes from door to door begging alms and sounding the *damaru*. This instrument may be played in either a standing or a sitting position.

(16) *Dha:*

This is a drum similar to the *dholak*. The essential difference between the two instruments is in the method of playing. The *dha* is always played in a standing position. The drummer beats the *dha* with a stick held in the left hand while striking the other end of the drum with his bare right hand. Thongs, which may be tightened or loosened, are used to control the desired tone. The *dha* is always accompanied by the *bhusya* and *taa*. It is played only during the month of Shravan (August). Occasionally an exception is made for playing it during a social or religious event. A social prohibition denies the use of this instrument by the untouchable castes.

ment with a cloth, brush, or directly by hand. When the surface is dry it is then polished by rubbing it with a smooth stone. According to a Nepalese legend, all instruments covered with *khav* produce such lovely sounds that workers in the fields become significantly delinquent in their production. This belief gains further support in relation to the rice planting season and it is of interest to note that during this most important group working activity, June to August (Jyaistha to Shravan), the playing of any instrument treated with *khav* is socially prohibited.

(17) *Dholak:*

The *dholak* is cylindrical, made of wood, and is covered at both ends with skin which may be tightened or loosened by means of leather thongs. It is played on both ends (heads) with the hands and fingers. Though it is known as "the matrimonial drum" it is also used in many other ceremonies by different castes. In the temples, as well as in the marriage ceremony, it is played with the *mohali* and *khwalimali*. On occasions, it may also be played in conjunction with a bell suspended from the temple ceiling by a long thread. The thread is attached to both the finger of the drummer and clapper of the bell. When the drum is struck with the hands, both the bell and the drum are then played simultaneously. The *dholak* may be played in either a standing or a sitting position. (Campbell also refers to this instrument as a *dishi*.)

(18) *Dhyamaya:*

A cylindrical drum, the *dhyamaya* was formerly made by hollowing out a wooden log. Today, however, it is frequently constructed of copper-plate sections. Both ends of the instrument are covered with an animal skin (generally goat) which can be tightened by leather thongs. One end (head) is struck with a piece of cane twisted into a coil which is used as a beater. The other end is played with the left hand. The drum is carried by a leather sling around the neck of the musician. It is always accompanied by the *bhusya* and, on occasion, by the *ponga* and the *tainai*. In most of the religious and social functions of Kathmandu Valley this instrument is allocated the first place in any procession. On all occasions it is played only by members of the Jyapu caste. The largest drum of this kind is located in a section of Kathmandu known as Tyauda Tole. The second largest *dhyamaya* is in Makkan Tole, while the third largest may be found in Brahma Tole. The *dhyamaya* is usually played in a standing position.

(19) *Dhyangro:*

The *dhyangro* is a plate-shaped leather percussion instrument consisting of a bamboo ring eighteen inches in diameter with several holes placed at various intervals. On both sides it is covered with skin which can be tightened by means of leather thongs. A wooden handle, attached to the *dhyangro* is held in the left hand of the musician. A crook-shaped cane is held in the right hand and is used to strike the drum. It is common religious practice for the various Bhotiya castes to use this instrument as a means of driving away evil spirits from the house of a person who is ill.[10] Once a year, on the full moon day of Shravan (August), the

10 Bhotiya here means people of Tibetan-Buddhist culture.

Bhotiyas participate in a ceremony at which time they march through the towns of the Kathmandu Valley beating on the *dhyangro*.

(20) *Donga:*

The *donga* is a wooden cylindrical drum, covered with skin on both ends. These skins can be tightened by means of leather thongs. It is somewhat larger than the *dha* and is played on both ends (heads) with the bare hands. Wheat flour, mixed with water, is placed on one side, the amount varying according to the tone desired.[11] During the month of Shravan (August) this drum is used in religious ceremonies. It is accompanied by the *bhusya* and *taa*. Social prohibition limits its use to the Gubhaju, Sakyabhikshu, and Tuladhar castes.

(21) *Khin:*

This is a wooden percussion instrument similar in shape to the *mridanga*. It is twenty-two inches in length, its two ends having diameters of six and eight inches respectively. Both ends are covered with skin which is tightened by means of leather thongs. The left end is painted entirely black and is called *mausa*. The other end has a small black painted spot of skin approximately ⅛-inch in thickness and some three inches in diameter mounted on the surface. This end is called *nasa*. The *khin* is usually accompanied by the *khwalimali* and the *taa*, and is commonly played by the Gubhaju, Sakyabhikshu, Tuladhar, Manandhar, and Jyapu castes. There is a social prohibition against its use from the first week of Jestha to the last week of Asadha (mid-May to July). This instrument may be played in either the sitting or standing position.

(22) *Konchakhin:*

The barrel-shaped instrument known as a *konchakhin* may be made of either clay or wood. One end is round with a small hole into which the middle finger is thrust while the instrument is being played. The other end is covered with skin and on its surface, some three inches in diameter, is a black-painted circular shape. To produce a desired pitch the drum head skin may be tightened by means of leather thongs. It is played with the right hand and is used to accompany the *khwalimali, taa* and *baye*. Only members of the Manadhar and Jyapu caste use this instrument. From the month of Jestha to the end of Asadha (May-July) social custom prohibits the playing of the *konchakhin*.

11 The one known exception to this custom is practiced in the valley town of Lalitpur (Patan), the "Arts and Crafts" center of Medieval Nepal. Here custom dictates that the mixture be applied to both sides of the *donga*.

(23) *Madal:*

The *madal* is a small, wooden, hollow cylindrical drum sixteen inches in length and six inches in diameter. The two ends are covered with parchment or skin. Similar to the *konchakhin,* an inner circular shape is painted black. The other end of the instrument is entirely painted black. The *madal* is played by striking both ends with the bare hands. It is hung around the waist with a leather band and may be played in either a standing or sitting position. This instrument is known as a *magakhin* among Newars, and is associated with the Magar caste who formerly were the group most identified with playing it.

(24) *Mridanga:*

A barrel shaped wooden drum, the *mridanga* is approximately two feet in length. Both ends are some nine inches in diameter and are covered with skin. By stretching thongs over small wooden cylindrical blocks, which may be moved up and down on the outside of the drum, a desired tone may be obtained. *Mridanga* is a Sanskrit word meaning "made of clay."[12] History and mythology mention the *mridanga* as the most ancient of drums. A legend states that after conquering the demon Tripurasura, Shiva was dancing when Brahma first saw him. Brahma then created the *mridanga* to accompany Shiva's dance. While the *mridanga* may be played in either the sitting or the standing position, it is most frequently played in the latter.

(25) *Nayekhin:*

This percussion instrument is a cylindrical wooden drum. Both ends are covered with skin that can be tightened by means of leather thongs. The *nayekhin* is some fourteen inches long and about eight inches in diameter. One end is beaten with a stick while the other is played with the bare hand. It may be played in both the standing and sitting positions. This instrument is played only by members of the Naye caste, hence the name of the instrument, *nayekhin* in Newari.[13]

(26) *Panchatalakhin:*

A percussion instrument quite different from others in this category is the *panchatalakhin.* It is a combination of two drums, one eighteen inches long with an eight-inch diameter, the other thirteen inches long with a five-inch diameter. This instrument is also called the *kotah.* Like most drums the *panchatalakhin* is covered with a thin skin that can be adjusted by means of leather thongs. The

12 Of interest is the fact that to date no evidence of a *mridanga* made of this material has been reported found.

13 This caste is called *kasai* by the Parbatia.

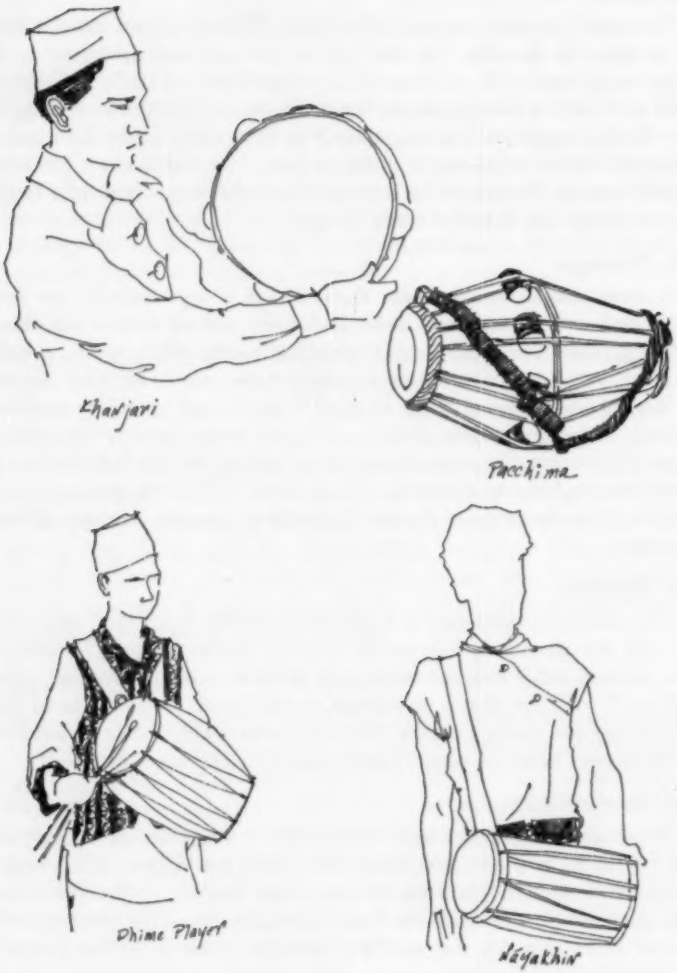

FIG. 3. Nepalese percussion instruments.

larger drum of the two is always accompanied by the *paita, khwalimali,* and *taa* and is never played alone. It is only played at the conclusion of a religious ceremony. The larger drum is played on both ends with the bare hands. In the case of the smaller drum only the top is used. These are very common instruments among the Gubhaju, Sakyabhikshu, and Tuladhar castes. They are not played by other castes.

(27) *Paschima:*

The *paschima* is in the shape of a cylindrical wooden drum resembling the *mridanga.* It is two feet in length. The diameter at the narrow end is six inches, the wider end being approximately eight inches. Both ends are covered with skins which can be tightened by means of leather thongs stretching over small cylindrical blocks of wood. The larger head has a three-inch black circular shape painted upon it. In order to produce a desired tone the drummer increases, or decreases, an amount of flour placed on the larger end. In addition, the wooden blocks, which may be moved up or down, affect the tension on the drum head, thereby controlling the pitch. The *paschima* is played on both ends with the bare hands and is most frequently used by the Jyapu caste. Other castes, however, do use it for recreation purposes. From the first week of Jestha to the last week of Asadha (mid-May to July) it is socially prohibited to play this instrument.

(28) *Tamar:*

This percussion instrument is similar in appearance to the tympani or Western kettle drum. It is made of clay or copper and its flat top end is covered with skin. This may be tightened by means of thongs. The *tamar* is fastened to the belt of the drummer by a leather tie. It is played by beating upon the skin or drum head with two small sticks held in the hands of the drummer. Members of the Damai and Kusule castes both play the *tamar* for the marriage ceremony and various other religious functions. The Damai use it in the company of the *khwalimali, damaha,* and the *sahanai.*[14] The Kusule play it with the *khwalimali* and the *mohali.* There are social prohibitions against its use by others than members of the untouchable castes.

MISCELLANEOUS INSTRUMENTS

(29) *Damfu:*

This is a round, circular instrument resembling the Western tambourine. Its frame generally is made of wood; however, on occasions metal and bamboo are

14 The *sahanai* is a wind instrument of Indian origin. Approximately a foot in length, it has a wide opening at the bottom graduating to a small mouthpiece. Holes along the side allow for notation changes.

used. Only one side of the *damfu* is covered with skin. It is held in the left hand and played by striking the skin surface with the right hand. The *damfu* is a solo instrument and is used to accompany singers and dancers. It is most commonly played by members of the Bhotia castes.

(30) *Khanjari:*

This is a wooden drum-like instrument made in various sizes. One simple type used by monks consists of a small, round, flat piece of wood covered with skin. While chanting hymns the drummer holds the *khanjari* in his left hand and plays it with his right. A variation of this instrument (used to accompany the *dholak, baye,* and other instruments) is a flat, round piece of wood covered with skin and painted with wax. Small bronze cymbals are attached to various places on the wooden section. The *khanjari* is not beaten but is played by pressing the skin and moving the thumb around the instrument. As the wax on the surface is uneven, the movement of the thumb produces a scraping, bumping sound causing the cymbals to ring simultaneously. Today the *khanjari* is occasionally made of metal. The small wooden *khanjaris* are used as solo instruments while the metal ones are usually played in the company of other instruments.

(31) *Tainai:*

A bronze plate, about ten inches in diameter, the *tainai* is played by striking it with a stick. It is used to accompany the *dhyamaya,* the *bhusya,* and the *ponga.* The name of this instrument is believed to have been inspired by the sound it makes.

INSTRUMENTAL COMBINATIONS (BAJAS)

In Nepal, combinations of particular instruments are given specific names. These instrumental groupings are known as *bajas* or *bajans. Bajan* also serves to identify the particular kind of music such groups play. Such musical combinations, as listed below, have unique functions as these pertain to the social and religious life of the country. The instrumental groupings that follow are common to both the Newari and the Parbatia.[15] When two names are shown, the Newari name appears in parentheses.

(I) *Damai baja*

Instruments comprising the *damai baja* group are the *mohali, tamar, damaha* and the *narasingha.* These are played during the marriage ceremony as well as for religious and social activities.

15 Parbatia is a *general* term used to identify the people of the hill regions outside of the Kathmandu Valley.

(II) *Dapa baja*

During the months of August and September (Bhadra), and October and November (Kartic), the *khin, khwalimali* and *taa* are played in the temples for various religious functions. This group also plays on social occasions.

(III) *Dhime baja*

The *dhime*,[16] *bhusya*, and *tainai* are played for both religious and social functions. In particular it is used during the Indra-Jatra festival. This musical combination is believed to be of ancient origin.[17]

(IV) *Gunla baja*

This particular ensemble has a number of combinations that may be used within the framework of the parent group. As an example, a grouping which includes two (or four) *dha*, plus a *taa* and a *bhusya*, may be used. Another combination groups the *donga, bhusya*, and *taa* together. A third group finds the *nayekhin, chhusya* and *taa* together. The *gunla baja* group plays throughout the month of Shravan (mid-July to mid-August) in such holy places as the temple of Swayambunath and other important Buddhist monasteries. On occasions this group may also participate in particular religious or social events.

(V) *Kasai baja (Naya bajan)*

The *nayekhin* and the *chhusya* constitute the only two instruments in the *kasai baja* group. They are played together during important religious events and for processions. Years ago special government announcements were proclaimed by two *kasai* musicians who marched through the streets playing these two instruments.

(VI) *Khau baja*

This group of instruments includes the *khin*, the *paschima* and the *konchakhin*. It is not allowed to play from the first week of Jestha (mid-May) to the last day of Asadha (July).

(VII) *Kusale baja (Jogi bajan)*

The mohali, dholak, and the *khwalimali* are used for marriage ceremonies as well as religious activities.

(VIII) *Nau baja*

The *nau baja* group is one of the most unique units of all of the Nepali instrumental combinations. Once a year, on the second day of the month of Shavran

16 This drum is somewhat larger than the *madal* and is similar in form. It is not listed as a separate instrument.

17 Purna Harsha Bajracharya, *Newar Marriage Customs and Festivals* (Southwestern Journal of Anthropology, vol. 15, pp. 418-428, 1959), p. 420.

(mid-July to mid-August), the musicians of this group play under the Lunjhya (golden window) in the former Palace of the Malla Kings of Patan (Lalitpur). Following this performance, the group then marches around the city of Patan. On the following day this group and various other combinations (see below) visit some of the important holy places in the Kathmandu Valley, i.e. Swayambhunath, Bugamati, etc., and play at these locations. Once a year it is necessary for the *nau baja* group to play before His Majesty, the King of Nepal. At the conclusion of this session, the musicians as a group do not play for another year.

The nine different instrumental sub-divisions making up the *nau baja* group consist of the following combinations:

(1) *Dha, bhusya,* and *taa.*
(2) *Nayekhin, chhusya,* and *taa.*
(3) *Dongo, khin, bhusya,* and *taa.*
(4) *Damaru* (solo).
(5) *Madal* (solo).
(6) *Tamar* (solo).
(7) *Paschima, khwalimali,* and *taa.*
(8) *Khanjari* (solo).
(9) *Konchakhin, khwalimali,* and *taa.*

(IX) *Paita baja*

This combination of the *panchatalakhin (kotah), taa (manjuri), khwalimali (babhu)* and five *paitas* is used for both religious and social functions. The *paita baja* group playing upon the completion of a particular work activity is an example of such a social occasion.

(X) *Pancha baja*

This group consists of a *tamar,* three *mohalis,* and a pair of *khwalimalis.* It plays during a processional of the Newar marriage ceremony.[18]

(XI) *Sii baja*[19]

The *Sii baja* combination includes the *nayekhin,* the *chhusya,* and the *kaha.* It is the group that is generally used for funeral processions. It may also play for social or religious events.

School of Architecture and Allied Arts
University of Oregon
Eugene, Oregon
Central Library, Lal Durbar
Kathmandu, Nepal

18 Bajracharya, *op. cit.*

19 This is a Newari term. In Parbatia a general translation would read *murda baja.*

SUCCESSION, COÖPTION TO KINGSHIP, AND ROYAL INCEST AMONG THE INCA*

MARÍA ROSTWOROWSKI DE DIEZ CANSECO

THE FRATRICIDAL WAR between Huascar and Atahualpa, which aided the Spanish conquest of the Inca state, was neither an isolated nor a new phenomenon in Andean history. Given the rules of succession, the struggle for power took place with greater or lesser intensity at the death of each king, since all sons of the Inca had equal accession rights and could aspire to power.

In writing of ancient Peru, the chroniclers took for granted that in the New World the senior legitimate son of the monarch would inherit the throne as he did in Europe. As we study the chronicles and check the events following the death of each Inca, we discover that the forms of royal inheritance were completely different.

Through their *quipus* and formal praise songs, the Inca kept track of detailed genealogies of their royal houses. At the death of the last member of a given branch, they could specify who was next in line. Instead, we discover that among the royal Inca, such lineage reckoning was disregarded in favor of *panacas*[1] or royal, status *ayllus*. Most chroniclers use this term to mean a new, separate kindred formed by the descendants of a reigning monarch, while his siblings and their progeny continued their affiliation with the *panaca* of their common grandfather. Such automatic creation of new *ayllus* in each generation was presumably absent in peasant *ayllus*, but information on this is inconclusive.

Among modern commentators concerned with the *ayllu*, Kirchhoff defines it as "a permanent group based on actual or supposed common descent of its members."[2] Rowe finds that "any attempt to establish the nature of the ancient *ayllu* by study of the chroniclers faces the serious difficulty in the looseness of Quechua terminology. The word *ayllu* is used in Spanish with several different meanings: 1) the lineages of the Inca royal class . . . ; 2) the social unit of several extended families . . . ; 3) occasionally the moiety." Rowe concludes that the Inca *ayllu* "was a kin group with theoretical endogamy with descent in the male line, and without totemism. It was, therefore, not a clan in the classical sense at all."[3]

* I would like to acknowledge the assistance of John V. Murra in the preparation of the final version of this paper; he also translated it from the Spanish.

1 González Holguín [1608], 1952, p. 277. (The date in square brackets following the name of the chronicler refers to the year of first publication or writing. The second, modern date refers to the edition used by the writer in the present article.)

2 Kirchhoff, 1949, p. 293.

3 Rowe, 1946, p. 255.

According to Valcárcel, the *ayllu* is primarily an economic unit, characterized by joint control of lands and labor.[4] Baudin thinks the *ayllu* was formed by all the descendants of a real or postulated ancestor; in addition to land tenure, Baudin emphasizes the religious bonds uniting the *ayllu's* members through the "worship" of their dead. In the twelve royal *panacas* this took the form of venerating the sovereign from whom they were descended.[5] In addition to these twelve, Molina, in his description of the *citua,* a purification ritual, mentions two other groups: Cuzco *panaca* and Masca *panaca;*[6] Sarmiento de Gamboa adds the Sauseray.[7] This may indicate that there had been other monarchs, not listed on the official roll, or *panacas* descended from kings who reigned before the Inca conquest of Cuzco.

The major stated function of the *panaca* was to perpetuate the memory and the mummy of its founder. This was done through *quipus* and particularly through chants and rituals which took place on ceremonial occasions in the presence of the sovereign and of the mummies of other dead Incas. A good example of such mixture of ritual and administrative privilege are the descendants of Inca Roca: Cieza tell us[8] that when this king was initiated and his earlobes pierced, the pain was such that he left the crowd and went out into the countryside. A great storm came upon him and he lowered his head in fear; suddenly he heard the noise of subterranean waters. At the time the Cuzco water supply was limited to small springs.[9] The news of the underground river was received with great joy and the work was begun to bring its waters through the city in stone-lined canals. Sarmiento confirms that Inca Roca discovered and channeled the creeks of Cuzco[10] and that his sons and heirs kept the rights to water distribution until the 16th century. When the drought was severe, the mummy of this king was carried, with its face covered, through the fields and pastures.[11]

The royal *ayllus* enjoyed considerable autonomy, each controlling its own lands and its own retainers. According to Cobo, in the last years of the Inca state they had taken over "the best farms."[12] King Huascar, who showed little skill in his dealings with the *panacas,* could attribute several of his defeats by his royal

4 Valcárcel, 1943-49.

5 Baudin, 1943, pp. 148-149.

6 Molina [1575], 1943, pp. 31-32 (second paging).

7 Sarmiento de Gamboa [1572], chap. xiii; 1943, p. 130.

8 Cieza de León [1550], bk. II, chap. xi.

9 *Idem,* bk. II, chap. xxxiv.

10 Sarmiento de Gamboa [1572], chap. xix; 1943, p. 144.

11 Cobo [1653], bk. XII, chap. ix; 1956, p. 73. For additional data, see the author's forthcoming *Ayllus y Panacas del Cuzco.*

12 Cobo [1653], bk. XIII, chap. x; 1956, p. 164.

brother to friction with the royal lineages. The *panacas* played an important administrative and political role in the Inca state and the enmity of influential royal *ayllus* could threaten the throne.[13]

Although the study of *panacas* and other kinship units is far from complete, the data in the chronicles do indicate that neither primogeniture nor the European notions of bastardy prevailed in the Inca state. In earlier times, the *sinchi* or war leader had been selected by the elders for his skill and valor. Garcilaso[14] mentions the existence of a variety of inheritance customs among the ethnic chiefs before the Incas, a variability which was not seriously affected by the expansion of the Cuzco domain. While he does mention primogeniture for some provinces, he also reports succession by "the son best loved by his vassals," which suggests election, not inheritance. Elsewhere, succession devolved on each brother in turn before returning to the sons of the senior brother. The inquiry conducted in the valley of Chincha,[15] on the coast, revealed that before and during Inca rule, the governing chief would select the fittest for the job; it did not matter if he was son, uncle, brother, or cousin to the ruler. There are numerous references in Toledo[16] about the selection of the most competent among the sons of a chief. Cobo[17] asserts that at the death of a local leader the Inca left authority in the hands of the oldest son, if he was able, and if not, picked another; Santillán states[18] that at the death of a *pachaca*-leader (one hundred households in the decimal administrative system), a "virtuous and competent" man was selected from the group without reference to his being kin of the deceased.

Las Casas affirms[19] that succession to chieftainship consisted of election of the man fittest to rule, with sons preferred to the rest. The one selected "was assigned government tasks as a test . . . while the lord was still alive and could correct and change the errors." Las Casas implies that this was common in all the Indies.

In the royal *panacas,* all sons born to the king's women had the same rights and thus all could aspire to succession. Here also, we find in the chronicles that "the ablest" of the sovereign's sons was "elected," meaning the one who managed to overcome his brothers either with weapons or by attracting greater support among the decision-making *ayllus.*

13 Pedro Pizarro [1572], 1844, pp. 53-55.
14 Garcilaso [1604], bk. IV, chap. x; 1941, p. 325.
15 Castro and Ortega [1558], 1934, pp. 144-145.
16 Toledo [1572], 1935, vol. 2, pp. 46, 50-51, 57.
17 Cobo [1653], bk. XII, chap. xxv; 1956, p. 115.
18 Santillán [1563-64], chap. xviii; Jiménez de la Espada, vol. 2, p. 72; vol. 3, p. 111; Cabello Valboa [1586], bk. III, chap. xvii; 1951, p. 330.
19 Las Casas [pre-1555], chap. xiv; 1923, pp. 75-76.

As the Cuzco federation extended its borders and forged an empire, the intrigues and struggles for power became bloodier and a threat to the state. Is it possible that the civil wars marking each succession were the major reason for the growing preference that the number of possible mothers of the heir be reduced to one? Known as the *coya* (queen) or *piui huarmi* (only woman),[20] she was the woman the Inca married on the day he received the royal tassle, either as king or as an associate in kingship; she was given to him in marriage by the Sun, his father. Marriage and assumption of full adult duties go together elsewhere in the Inca state. In the peasant community, marriage was the threshold to becoming a *hatun runa* (big man), which at the state level meant that one was now enumerated by the census as liable for labor services to the state.[21]

Betanzos indicates[22] that the oldest son of the *coya* was the heir, but adds that if she had only daughters, they selected from among the sons of the other royal women the "one who seemed to be more capable to rule and govern his kingdom and state." Huamán Poma tells us[23] that the heir had to be the son of the *coya:* "they paid no attention if he was older or younger but the one selected by the Sun." Morúa identifies[24] the sons of the *coya* as the natural heirs of the royal tassle: the one who succeeded among them "was the one most cunning and capable at war and rule . . . and if the inheriting prince was not fit to govern and had no brothers, they picked the one among the bastards who was more of a man and had the qualities that were needed." El Palentino assures us[25] that the woman the king married during the accession ceremonies was "the queen and the one who ruled all the other women." If she had no male offspring, the royal elders selected the heir from among the other sons of the monarch and made the queen adopt him. The same happened if the *coya's* son was unfit, as "they did not consent that such a one should succeed." In a letter to the king of Spain in 1572, Viceroy de Toledo recorded: ". . . in the succession to the empire they did not select the first born but the son who showed most capacity to govern."

The tradition of leaving the kingdom to the ablest prince, in other words, to the one who could enlist the most influential of partisans, must have led frequently to favoritism, intrigues, and assassinations; so the elections came to be governed less by merit than by the secret maneuvers of the candidates and their kin.

20 González Holguín [1608], 1952, p. 291.
21 Murra, 1958, p. 33.
22 Betanzos [1551], chap. xvi; 1924, p. 185.
23 Poma [1615], 1936, p. 118.
24 Morúa [1590], bk. III, chap. vi, 1946, p. 175.
25 Fernández (El Palentino) [1571], bk. III; 1876, pp. 360-361.

Given the anarchy in Cuzco at the death of each king, it is probable that the custom of coöpting the future heir to kingship during the sovereign's lifetime was an effort to reduce strife. In talking about inheritance among the Inca, Santillán reports that the heir "was not necessarily the eldest but the one preferred by the father and whom he wanted to leave as king; and while still alive, he gave him the tassle which was the symbol of kingship and with it he was left, elected to rule at the death of his father. . . . the Inca always selected the most worthy of his sons, or the one born of his sister or a woman of his own lineage." If both the Inca and his heir died, "the big ears" or royal dignitaries "selected another brother and gave him the tassle."[26] The evidence indicates that this coöption could be canceled, and the co-ruler replaced.

Another method used to protect the heir from murder and rebellion was to hide the news of the death of the sovereign.[27] If the Inca fell seriously ill, he was taken to a faraway wing of the palace where he could be visited only by his favorites among wives and offspring. If he got worse, the efforts to censor all news intensified, and if he died, they tried to keep his death a secret for as long as a month. Meanwhile, the heir informed the governors in the provinces of the events, and urged increased vigilance within their jurisdiction. Once the control seemed secure and peace more likely, the death of the sovereign was announced and the official funeral ceremonies begun.

There is no need here to enumerate the details of each succession. The data on the early reigns are sketchy, frequently contradictory; the salient facts are the intrigues, the fratricidal struggles, and the efforts by the king to pick his own successor from among the many sons who may have shown the required talents. Apparently coöption did work at least once among the early kings: at the death of Inca Roca, we are told that his son Yahuar Huacac, the *coya's* first-born, succeeded to the throne without strife.[28]

During this king's reign—so legend records—conspiracies and rebellion among the chiefs of the Cuzco area were frequent. Following his father's example, Yahuar Huacac tried to coöpt to kingship the second son of his *coya*, Pahuac Gualpa Mayta, but the latter died soon afterward, murdered through the intrigues of one of the king's women who wanted her own son picked for co-ruler. Soon the king himself died in a conspiracy; the royal elders then selected Viracocha.[29]

26 Santillán [1563-64], chap. xviii; Las Casas [pre-1555], chap. xiv; 1923, pp. 75-76.

27 See succession of Sinchi Roca in Cabello Valboa [1586], bk. III, chap. xi; 1951, p. 274; Sarmiento de Gamboa [1572], chap. xiv; 1943, p. 133. For additional data on royal succession see Rostworowski de Diez Canseco, 1953.

28 Sarmiento de Gamboa [1572], chaps. xxii-xxiii; 1943, pp. 153-155.

29 Cieza de León [1550], bk. II, chap. xxxvii.

Eventually this king chose as his successor one Urco, son of one of his many women, and associated him at the throne. At about this time, Cuzco was threatened by Chanca troops and the two kings withdrew from the city. The defense and eventual victory of the Cuzco-dwellers, captained by another son of Viracocha, Pachacuti, led to this prince assuming power as "the most able," even while his father was still alive.

After a long reign, Pachacuti coöpted his son Amaru Yupanqui,[30] a nomination he withdrew some years later since he decided that Amaru did not have all the qualities he wanted to see in his successor. Apparently the heir was not "war loving" enough. One of the younger sons of the *coya,* Tupa Yupanqui, was then selected.

According to many sources, it was at this time in Inca history that the custom of the heir or co-ruler marrying his sister was introduced.[31] El Palentino affirms[32] that they only married a half-sister, and the only one who did it "was the one who was going to be king and heir and no other." It is my conjecture that the custom of royal incest arose as a way of strengthening the succession rights of the *coya's* sons and as a method, beyond co-rulership, of avoiding strife and civil war at succession.

During Tupa Yupanqui's reign and despite his "ability to reign," there was an attempted coup initiated by a royal brother, Tupa Capac, who felt he had been cheated. He took advantage of his rank and the responsibilities entrusted him by the king, to rise in the very city of Cuzco. Defeated, he was condemned to death.[33]

According to Viceroy de Toledo's informants, Tupa Yupanqui was not very aged at his death; he is reported to have been neither young nor old.[34] Possibly this is the reason he had not coöpted anybody to his rule; in any case, his death is mysterious. Cabello says he died in Cuzco, but also reports that his heir went to mourn him in Caxamarca. Morúa asserts that he died from an arrow, while Cabello mentions poison.[35] Events determining the succession are also unclear. The king had

30 Sarmiento de Gamboa [1572], chaps. xli to xliii; Las Casas [pre-1555], chap. xxv; Cabello Valboa [1586], bk. III, chap. xviii; 1951, pp. 334-335; Santa Cruz Pachacuti [1613 ?], 1927, pp. 189-194.

31 Cobo [1653], bk. XII, chap. xiv; 1956, p. 83; Poma [1615], 1936, p. 139; Sarmiento de Gamboa [1572], chap. xliii; 1943, pp. 206-207.

32 Fernández (El Palentino) [1571], bk. III; 1876, pp. 360-361.

33 Santillán [1563-64], chap. ix; Sarmiento de Gamboa [1572], chap. li; 1943, pp. 228-229; Cabello Valboa [1586], bk. III, chap. xix; 1951, p. 346.

34 Toledo [1572], 1935, vol. 2, p. 148.

35 Sarmiento de Gamboa [1572], chap. liv; 1943, p. 234; Cabello Valboa [1586], bk. III, chap. xx; 1951, p. 358; Morúa [1590], bk. I, chap. xii; 1946, p. 74.

originally leaned toward the youngest son of the *coya*, Mama Ocllo.[36] Before the king's death, however, this appointment was withdrawn in favor of Capac Huari, the son of another woman. Although selected in this way, Capac Huari never became co-ruler; perhaps because he was too young.

Sarmiento de Gamboa and Cabello[37] report the palace intrigues which accompanied the accession of Huayna Capac. The leading royal relatives were still guarding the news of the sovereign's death and went from Chinchero to Cuzco to prepare the ceremonies. One gathers from Sarmiento's text that "the big ears" had not heard of Tupa's alleged last will and were quietly and secretly preparing the transfer of the royal tassle. It is possible that the selection of Capac Huari was extracted from Tupa Yupanqui on his deathbed by the relatives of Chiqui Ocllo, a "concubine" and mother of the candidate. The claim of these relatives was asserted but beaten back by the partisans of the child, Huayna Capac, led by an "uncle," presumably the "brother" of the *coya*, Mama Ocllo. Cieza gives no details,[38] but asserts that "there were difficulties among the very Incas since various sons of Tupa Yupanqui, by women other than the *coya*, tried to claim the royal dignity."

Before he actually took over, Huayna Capac had a tutor from among his relatives, called Hualpaya, who at one point tried to assert the claims to the throne of his own son. The same "uncle," Huaman Achachi, who had repelled Capac Huari's thrust, organized the resistance and Hualpaya was killed.[39]

Although Huayna Capac's death had taken place so recently before the advent of the Europeans, it is nevertheless full of uncertainties; various interpretations of the "facts" are plausible. Huayna Capac had no sons by his sister, the *coya*. Among his sons by other women, three were outstanding: Ninan Cuyuchi, Athualpa, and Huascar. The latter's mother, though not the *coya*, was also a "sister" of the king and she took an active part in the intrigues following the sovereign's death.

Ninan Cuyuchi is mentioned by various sources; Sarmiento and Cabello indicate him as the heir selected by Huayna Capac, who also died unexpectedly. Another version recorded by Vaca de Castro's official informants accuses Ninan Cuyuchi of plotting against Huascar.[40] In a modern study of Huayna Capac's

36 Sarmiento de Gamboa [1572], chap. lv; 1943, p. 236.

37 Cabello Valboa [1586], bk. III, chap. xx; 1951, pp. 358-361.

38 Cieza de León [1550], bk. II, chap. lxi.

39 Sarmiento de Gamboa [1572], chap. lvii; 1943, p. 238; Santa Cruz Pachacuti [1613 ?], 1927, p. 204.

40 Sarmiento de Gamboa [1572], chap. lxii; 1943, p. 251; Santa Cruz Pachacuti [1613 ?], 1927, p. 208; Cabello Valboa [1586], bk. III, chap. xxiv; 1951, p. 394; Vaca de Castro [1540's], 1920, p. 23.

descendants Temple finds considerable evidence that Ninan Cuyuchi was the son favored by Huayna Capac.[41]

There is even more controversy about the birthplace of Atahualpa. An 18th century source, Velasco, tells of the fabulous kingdom of the Scyris and of Huayna Capac's marriage to its dowager queen. Atahualpa is alleged to have been born of this marriage. A different version is found in Cieza,[42] a source frequently very reliable, who inquired "with great diligence" about Atahualpa's birthplace. He was told that the prince was born in Cuzco and was older than Huascar. His mother, according to Cieza, was Tupa Palla, from Quilaco, of the Hurin Cuzco moiety and all other tales are "a deceit." Alternate sources call her Tocto Coca, of Pachacuti's *panaca* or lineage. If we accept the version of most chroniclers, that the mother of Atahualpa was not a Quito princess, but the daughter of one of Cuzco's royal lineages, the whole traditional account of the battle between the rival brothers is upset.

When Huayna Capac left Cuzco to undertake his Ecuadorean campaign, he left Huascar in charge. Such an interim appointment went always to a brother or son of the Inca. Despite his advanced years, he had not designated a co-ruler. There is no way at this time to ascertain the reasons for this neglect, but there is evidence that many "big ears" were discontented and the rivalries between the sons had led to the formation of factions.

Sarmiento and Santa Cruz Pachacuti tell of a quarrel between the king and some royal relatives after a battle against the Cayambi, in which the Cuzco forces had been defeated and the royal kin had fled, while the king's litter had fallen to the ground. Angry, Huayna Capac cut the rations and the usual gifts to the "big ears";[43] events reached a point where, led by a general called Mihi, the king's relatives decided to return to Cuzco on their own. Huayna Capac had to ask for the intercession of the priests and to offer them many gifts to get them to stay.

Shortly afterwards Huayna Capac fell sick and on his deathbed appointed Ninan Cuyuchi. The royal relative who went to notify the prince found that the heir was also dead, victim of an epidemic which apparently was scourging the area. There is a report that general Mihi also died of this "plague," though it may have

41 Temple, 1937-40.

42 Cieza de León [1550], bk. I, chap. xxxvii; bk. II, chaps. lxii and lxix.

43 Sarmiento de Gamboa [1572], chap. lx; 1943, p. 245; Santa Cruz Pachacuti [1613 ?], 1927, pp. 212, 214; Cabello Valboa [1586], bk. III, chap. xxii; 1951, p. 371. In Tomebamba, King Huayna Capac began to "entertain his captains and soldiers with invitations and fiestas to which he never called the 'big-ears' as he used to, nor did he issue them rations every ten days as was customary, but from month to month."

been convenient for some of the factions to eliminate the leader of an important sector of the royal kin.

At that time Atahualpa, who had partisans among the leaders of his father's army, had no influence in Cuzco administrative and royal circles, since he had been away from the capital (for as long as ten years, say Cabello and Cobo) while Huascar acted in his father's place. In such circumstances Huascar had built up a following with the help of his mother, Raua Ocllo, who was very active on his behalf.

The tensions between court circles who had brought Huascar to power and the army re-emerged later in a battle between the rival brothers. It was not a war between North and South, nor was it a novel phenomenon in Inca history. Each of the two princes felt himself called to reign and one of them was bound to lose. The sequence of events can be reconstructed as follows.

When, after Huayna Capac's death, Atahualpa remained in Quito, Huascar's anxiety over his brother grew. Sarmiento de Gamboa tells us that Huascar had cruelly killed some leading members of Pachacuti's lineage for allowing Atahualpa to remain in the north. This focussed the hatred of the Hanan Cuzco moiety on the king. The latter is reported to have "discovered" that the royal lineages controlled the best lands and enjoyed considerable autonomy. Pedro Pizarro reports that friction arose when the king threatened these holdings; at a given moment the dispute grew so bitter that the Inca threatened to leave the Hanan Cuzco moiety into which he was born.[44] All this must not be underestimated when we search for the reasons for Atahualpa's victories over his royal brother's generals.

CONCLUSIONS

In the early days of the Inca state, succession to power went to a son of the Inca, selected by the reigning monarch, or in an emergency, by a council. The various candidates tried to rally the support of their kinfolk. There was no primogeniture, nor was bastardy an aspect of legitimacy.

All the sons of a king had, in theory, equal rights to the royal tassle. In consequence, intrigues, rebellions, and the violent elimination of rival candidates were common. In an effort to avoid such strife, beginning with Inca Roca, one of the sons was associated as co-ruler with his father and designated as the heir. The co-ruler shared in administrative and military tasks. This co-ruler could be removed by the Inca.

In later reigns, coöption to rule was reinforced by limiting succession to the

44 See notes 12 and 13. Also Sarmiento de Gamboa [1572], chaps. lxviii and lxvii; 1943, pp. 254, 269-270.

"capable and brave" among the sons of the *coya*, the only "queen" among the many wives.

Eventually, and still in an effort to eliminate succession squabbles and civil wars, at the peak of the empire's glory, Tupa Yupanqui introduced royal incest as a way of legitimizing succession by the *coya's* son.

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LIMA, PERU

OCCURRENCE OF FIRED BRICKS IN PRE-CONQUEST MEXICO*

HARRIETTE H. THOMSEN

THE BELIEF that fired brick[1] was not known in the Western Hemisphere prior to the introduction of the art from Spain was current for many years. So widespread was this conviction that despite early and persistent reports in the literature that fired bricks had been seen, it was still possible for an able commentator, as late as 1927, to write concerning Tizatlán:[2] ". . . but never, until now, has baked clay in the form of tile or brick been found in any archaeological construction."

In the Old World the use of brick as a construction material dates back into prehistory. The earliest examples were sun-dried, but it is generally believed that the practice of firing in the open air or in kilns had been adopted in the Tigris-Euphrates basin as anciently as 3000 BC.[3]

An examination of the references to bricks in Mesoamerican literature justifies the skepticism of the archaeologists with respect to the age of the reported findings; many were suspect, either because of a lack of supporting evidence or because they were capable of an alternate explanation. The earliest report known to the writer is that made by Hernan Cortés in the so-called Second Letter (written 1520)[4] wherein he refers to a walkway at Iztapalapa which was "ladrillado," and later makes two specific references to "ladrillos" in his enumeration of the articles displayed in the Great Market of Temistitan. The archaeological significance of these references will be discussed in that section of the present paper which deals with the Valley of Mexico.

Gómara,[5] in his account of Cortés' landing in Tabasco just before Easter, 1519, describes the town of Potonchán as consisting of: ". . . fine, big houses of mortar and brick or stone; there are others of adobe and wood, but the covering is straw or slab." This can be interpreted either as a circumstantial account of four building materials: brick, stone, adobe, and wood (plus two roofing materials), or that the houses of Potonchán were, to the casual eye, made of some sharp-edged, probably rectangular, material which could have been brick, or could have been stone, or

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1 For purposes of definition: throughout this paper, unless otherwise noted, the term brick ("ladrillo"), when used, denotes a building material of intentionally fired clay, hand-molded or mold-made; the term adobe, when used, denotes a building material of unfired or sun-dried clay.

2 Garcia Vega, 1927, pp. 12-18.

3 Lloyd, 1954, pp. 457-464.

4 Cortés, 1522.

5 Gómara, 1887, pp. 44-60.

even sometimes, adobe. Since, reputedly, Gómara never set foot in New Spain, the latter interpretation, if true, may derive from his own indecision as to fact. The passage of more than four hundred years renders Gómara's account unverifiable except by archaeology, but it gains in stature if placed alongside the evidence from the Maya city of Comalcalco which lies a few miles distant to the southwest. Linguists may help us if they can learn whether the 16th century Mayance languages had a word for fired bricks.

Charnay saw "baked bricks" at Bellota, Blasillo, and Comalcalco[6] including at the latter site, two with incised patterns. Charnay was an acute observer and correctly linked the style of Comalcalco with other Mayan sites; his preoccupation with the Toltecs, however, led him to suppose that they had been the dominant influence in the construction, not only of Comalcalco, but of Palenque.[7] However, other visitors, among them Berendt,[8] Brinton,[9] and Blom and La Farge,[10] reported on the construction details of Bellota (San Jose de la Bellota), Cintla (sometimes Centla), and Comalcalco, providing abundant evidence that fired bricks had been widely used in the Tabasco region.

Comalcalco is an extensive complex; for several centuries the construction method most frequently used was successive layers of packed earth, each layer being surfaced with a unit of lime-aggregate, wash coat, and plaster.[11] Some time before the abandonment of the site, enormous quantities of bricks were fabricated and were used in many parts of the site as a basic construction material. The bricks show a great variety in color and size: some individual bricks measure more than a meter in length, but on the average they will run about 25 centimeters in length, 19 centimeters in width, and 4 centimeters in thickness; in most cases the mortar between the bricks is of a greater thickness than the brick itself.[10] The definitive description of the site materials and the positive identification of the bricks as of pre-Conquest date must await the publication of the comprehensive report on the explorations carried out by the American Museum of Natural History under the direction of Gordon F. Ekholm.[12] Ekholm is of the opinion that bricks came into use at Comalcalco probably between 800 and 900 AD, toward the very end of the Late Classic Period. He states that the bricks are very well fired but were not made in molds; that the method of manufacture was undoubtedly one of placing a thin slab of clay on the ground and cutting it into rectangles with some kind of knife.[13]

6 Charnay, 1883, pp. 188-206.
7 Charnay, 1881, pp. 187-194.
8 Berendt, 1876, p. 138.
9 Brinton, 1896, pp. 259-268.
10 Blom and La Farge, 1926, pp. 97-114.
11 Littman, 1957, pp. 135-139.
12 American Antiquity, 1956; 1957.
13 Ekholm, personal communication, June 2, 1958.

The verification of the presence of pre-Conquest fired bricks at Comalcalco lends support to the reports in the literature of their occurrence at Coixtlahuaca, State of Oaxaca; at Cholula, State of Puebla; at Tizatlán, State of Tlaxcala; at Huexotla, Chiconautla, and Tlatelolco, in the Valley of Mexico; at Tula, State of Hidalgo; and at Chalchihuites, State of Zacatecas. If the art was known in one part of Mesoamerica, it is almost inevitable that it should be known in others, at least in those parts of the area criss-crossed with pre-Conquest trade routes. The verification presupposes, further, that as archaeological exploration continues, fired bricks will be found in other Mesoamerican sites.

The evidence for the presence of fired bricks at the sites listed above varies in value and merits discussion.

Coixtlahuaca

There is evidence that the Mixteca region of northern Oaxaca is a rich, but relatively unexplored, archaeological area. Dr Ignacio Bernal directed an excavation in a hill known as Inguiteria, west of the town of Coixtlahuaca, revealing an extensive habitation site, part of which could be equated with the Aztec period due to the presence therein of ceramics of Azteca III.[14] Also, among numerous burials one was of Aztec type. In his monumental work on prehispanic architecture Marquina states that the city was of relatively late date, surely subsequent to Tenayuca, even though there remained some survivals of Tula influence.[15] Evidence that the site was occupied during the Aztec period is pertinent to the present discussion since in the closing days of the work at the site a wall of bricks was uncovered at one of the lower levels. The wall is described as being in very good condition, made of fired bricks with an average size of 16 centimeters by 4 centimeters, the wall having a thickness of 11 centimeters. At another portion of the site a test bore revealed a flight of steps constructed of stone and brick, covered with stucco, and other fired bricks used in conjunction with certain architectural features.

Cholula

In the early 1930's intensive explorations were undertaken in Cholula, a site just west of the present-day city of Puebla, under the direction of Dr Eduardo Noguera. A great many factors confuse the stratigraphy at Cholula: long occupation, invasions in early times, and extensive farming operations up to the present, over-building by conquerors, road and railroad cuts, all have conspired to make difficult the task of dating and of interpreting stratigraphic relationships.

No fewer than sixteen areas of the Cholula site were literally dissected by the Noguera group, resulting in an immensely detailed study of the ceramic finds.[16]

14 Bernal, 1948-49, p. 5, 15-16.

15 Marquina, 1951, pp. 370-371.

16 Noguera, 1954, pp. 12-43.

Incident to the catalog of ceramics, the Reports on Excavations 1, 3, and 7 (1932-33) and Excavation 11 (1935) referred to the finds of bricks, sometimes fragmented and at other points in the form of walls and floors; only one of the finds appeared to merit consideration as pre-Conquest. In Excavation 1, Noguera points out that there is some undoubted mixture of contents in the upper layers and that some of the fragments corresponding to the upper layers may have slipped into the lower levels. However, in a private communication he states that the bricks in Excavation 1 are prehispanic because they were associated with prehispanic vessels and are much thicker than those found in the upper layers of Excavation 7. The collection of the Departmento de Monumentos Prehispánicos in Mexico City contains a specimen brick taken more recently from a still deeper level which Noguera believes probably corresponds to a still earlier culture.[17]

Tizatlán

Northwest of Cholula lies the high valley of Tlaxcala, a point well-removed from the hot alluvial plains of the east coast of Mexico. Here the excavation of a mound adjacent to the church of San Esteban of Tizatlán revealed a temple site, stucco and murals still bright with pagan color. Caso[18] says:

> Undoubtedly we are dealing with the upper room or sanctuary of an indigenous temple . . . the feature which attracted our attention most in these ruins, and perhaps is its outstanding trait, is the use of brick or baked adobe as a construction material . . . the greater part of the broken bricks show in the center a black nucleus, a sign that it was not perfectly baked.

The bricks, although slightly variable, are uniform in size, averaging 55 centimeters in length, 30 centimeters in width, and 6 centimeters in thickness.[19] They are rather elegantly made, and have been used according to what appears to be a careful plan: as facing on sloping walls and on a structure at the rear of the platform on which the altars stand; as treads on the six-stepped stairway (in this latter case the average width of the brick is 21 centimeters), and they are used as the top layers of the altars. It is the last-mentioned use which is the chief archaeological support for their pre-Conquest manufacture: Noguera[20] accepts their antiquity (although admitting that there is "no indication whatever of date") based on the

17 Noguera, personal communication, November 18, 1958.

18 Caso, 1927, pp. 2-3.

19 Organic matters in clays, which tend to have a brown to black color before firing, should be fully burnt out before baking is completed; frequently, this does not happen and the core of the piece remains grey or black, either because the surfaces become baked before the carbon has been fully oxidized or because too little oxygen is available.

20 Noguera, 1927, p. 61.

fact that the bricks appear to have been put in place on the altars prior to the application of the stucco on which is visible the extensive paintings which he correlates with the Codices. He says:

> . . . Motolinía, especially, recounts to us the great celebration which the Tlaxcalans made in honor of Camaxtli. . . . Can we suppose that these were the altars where this ceremony was celebrated . . .?

Although the Spaniards were never again absent from Tlaxcala after their triumphant entry in September, 1519, the historical accounts of the founding of the church of San Esteban at Tizatlán are confused and inconsistent. Most of the chroniclers agree, however, that at the time of the Conquest, this was the site of the palace of Xicoténcatl the Elder, who was baptized into the Catholic faith in 1520.[21] Due to the near-blindness and advanced age of the elder Xicoténcatl (he is reputed to have been 120 years old), his son of the same name was ruling as his coadjutor and in that capacity led the short-lived resistance to the forces of Cortés. In 1521 Cortés had the younger Xicoténcatl hanged at Texcoco. One of the stories recounted by Salazar Monroney in his *Monografías Tlaxcaltecas* has the feeble, blind old man stumble to the "altares de Camaxtli" to ask compassion from the gods on hearing of the execution of his son. It seems unlikely that the site underwent any extensive reconstruction in the pagan style after the arrival of the Spaniards.

The only published reference to the use of fired bricks in Tlaxcalan habitations, known to the author, is that set out by Antonio de Herrera[22] who states that "the flat-roofed houses . . . are made of adobes, bricks, and of mortar and stone." Herrera is, of course, not a primary source, and diligent search has not identified the document from which he takes this description.

Valley of Mexico

There are references in the literature to the use of fired bricks in at least four sites in the vicinity of Mexico City; two other cases are established in unpublished material. In none of these is there evidence to show that the use was extensive.

Captain G. Dupaix,[23] traveling in 1806 between Puebla and Cuernavaca, describes a visit to an "island" in Lake Chalco where he saw baked bricks, making a decisive point that he was *not* referring to adobes. Brantz Mayer, a Secretary to the Legation to Mexico, recounts a visit that he made to the town of Texcoco in 1842, and describes large mounds built partly of burned and partly of sun-dried

21 Toussaint, 1927, pp. 173-180.
22 Herrera, 1730, p. 155.
23 Dupaix, 1834, p. 7.

bricks.[24] There is in the American Museum of Natural History, New York City, a fragment of brick to which is affixed a note in Mayer's handwriting as follows:

> This fragment of brick was taken by me in October 1842 from the ruins of an ancient Aztec edifice at Tezcoco, Mexico, which is said to have been either one of the Teocalli or a royal palace. In size this fragment is about ½ of the whole brick.
>
> [Signed] Brantz Mayer

The size of this fragment is: average width 11.5 centimeters, thickness 7 centimeters, length at longest point 15 centimeters, and the brick shows a dark nucleus at about 2 centimeters penetration. Mayer's assertion as to the antiquity is unsupported by any archaeological association. In the course of this study the author has encountered greatly varying opinions on the occurrence of fired brick in and around the town of Texcoco; in view of the fact that opinion among competent archaeologists appears to be divided, it would seem desirable that all reports of the finding of bricks in this area should be carefully evaluated in the light of archaeological evidence.

The Instituto Nacional de Antropología e Historia in Mexico City has a specimen brick taken from the mound called "Santiago" at Huexotla (about three miles southeast from the present town of Texcoco) which measures 14½ centimeters in length, 8 centimeters in width, and 3¾ centimeters in thickness. This fragment has a well-defined dark nucleus. Very little excavation has been done at Huexotla and it is quite possible that a systematic uncovering of the many mounds in the vicinity may bring more specimens to light. Of special interest to the author was the discovery, on a recent visit to Huexotla, of a fired-clay object in a section of the main exposed mound, below and forward from the restored portion. The recent rains had washed away the soil still adhering to the lower section of the mound, revealing a dry (mortar-less) wall constructed of field stone; wedged between several courses of stones was what appeared to be a brick. The rains had rendered the wall so insecure that the "brick" was slipping from its place; a broken corner showed the interior to be of a vivid red with a thick black nucleus and the underside proved to have a certain sculpturing overlaid with a thin layer of stucco. The object has been identified by Noguera as no brick, but an "almena," rare enough, but not unique since a number have been found at Huexotla. Its interest, as far as the present discussion is concerned, lies in the fact that whatever its original purpose, it is of fired clay and found in use as a construction material.

In 1944 an exploration was commenced of the ancient temple site of Tlatelolco. The excavations, under the direction of Dr Pablo Martínez del Río, revealed a

24 Mayer, 1852, p. 275.

floor or patio of bricks, lying at a depth of 1.65 meters.[25] The report for the site states:

> The bricks are very large, 0.42 m. by 0.17 m. by 0.08 m., true baked adobes. They are found mortared with mud and show some characteristics which seem like prehispanic traits, since in their dimensions they are similar to those which are found in Comalcalco . . . and in Tizatlán, Tlaxcala. Its color, a vivid red, is that of a well-fired modern brick.[26]

Although these bricks appeared to be true bricks, for several years Dr Martínez del Río reserved judgment, due chiefly to the fact that the bricks had been uncovered so close to the surface; the report for the season's work summed up their status as:

> . . . perhaps should be deemed prehispanic, however there exists also the possibility that they may be dated back to the first years of the Spanish domination.[27]

One feature of later excavations which lends weight to the fact that the bricks may be of pre-Conquest origin lies in the fact that no modern nor colonial ceramics were found in the immediate vicinity of the "Patio de ladrillos"; the sherds were few, but they were all identified as prehispanic.

Acceptance of the Tlatelolco bricks as prehispanic, and proof of their having been fired, would offer the best archaeological evidence that Cortés may in truth have seen bricks in the Great Market on his first visit to Mexico. In the *Carta Segunda* hereinabove referred to, he listed a series of construction materials such as worked and unworked stone, adobes, bricks, hewn and unhewn timber of various kinds. Bernal Díaz del Castillo, [28] writing a good forty years after the publication of the *Carta Segunda,* supplies many details of the visit to the market at Tlatelolco; his list of the commodities displayed parallels that of Cortés in many respects, but he does not include bricks. Sahagún lived in Tlatelolco while he was assembling much of the material included in his great work.[29] He describes the qualifications of the stone cutter and the mason, and writes extensively on the preparation of lime; none of the translations yet available contains any reference to either the making or setting of bricks.

25 Martínez del Río, 1944, pp. 257-258.

26 The attention of the reader is drawn to the similarity of the measurements of these bricks to the Chiconautla brick hereinafter described. The characteristic Tizatlán brick is much wider than those described at Tlatelolco, whereas those Comalcalco bricks which the author has measured are characteristically thinner than any reported from the Valley of Mexico.

27 Martínez del Río, 1944, p. 516.

28 Díaz del Castillo, 1950, vol. 1, pp. 351-362.

29 Sahagún, 1938, chap. 8, pp. 30-63.

An unpublished manuscript by the late George C. Vaillant, now in the possession of the American Museum of Natural History in New York, reports the presence of fired bricks at the site of Chiconautla. In the Museum collection (Item no. 30.2/2758) is a specimen brick from the site, measuring 37 by 18 by 7 centimeters. The area of the Vaillant explorations is now largely returned to agricultural use but a recent visit to the vicinity produced a brick fragment, closely resembling the Museum specimen, in association with a plaster floor.

Jose Garcia Payon, in material now being prepared for publication, reports on the discovery of fired brick at Calixtlahuaca, near Toluca. He reports that during work on Mound Number 10 some large thick bricks of baked clay were found, citing an association with a sculpture representing Centeotl, the goddess of maize.

Payon has given no measurements for the "large thick bricks" just referred to, but a comparison of the fragments which have been reported from Texcoco, Huexotla, and Chiconautla shows that they are sufficiently like the Tlatelolco bricks in color and size (and sufficiently unlike the bricks of Comalcalco, Cholula, and Coixtlahuaca) to justify the assumption that a characteristic product was being made and used in the Valley of Mexico and its environs, but whether this technological advance was achieved prior to the Conquest does not appear to be conclusive on the basis of the present data. It would seem desirable that a systematic study should be made of these and other sites in the Mesa Central for the express purpose of locating and testing specimen bricks. Correlation with archaeological data could then determine if the identification of such bricks as of pre-Conquest manufacture is justified.

Tula

Charnay has left an account of his explorations at Tula during the year 1880.[30] He says:

> Among the objects found are thick red bricks of coarse clay; this is all the more curious because hitherto we have nowhere seen baked bricks employed. . . . We find also great masses of baked clay, the original form of which it is difficult to conjecture. But the most singular thing found is some charcoal incased in baked clay. What could have been the use for this we are at a loss to determine.

The "charcoal" can have been the result of incomplete oxidation, but it is believed more likely to have been testimony to the great fire at Tula which charred the wood and fired the adobes and the mortar with which they were set. Señor Jorge R. Acosta, who has been associated with the explorations at Tula for many years, has found ample evidence of the use of wood, which was combined with

30 Charnay, 1880, pp. 519-527.

clay and stone for the formation of columns, roof supports, and the like; the archaeological evidence and deductions therefrom are set out in the Reports cited below.[31] During the early days of his work at Tula Charnay believed that the finds of delf(t), porcelain, and glass represented indigenous arts, but reluctantly came to the conclusion that the finds were a mixture of Indian and post-Conquest objects. He never expressed any doubt as to the prehispanic origin of the bricks. Until and unless future archaeological exploration discloses some indubitably prehispanic bricks the best assumption is that Charnay's "huge baked bricks" were accidentally fired adobes.

Chalchihuites

The sites referred to above lie well within the limits of the so-called "high culture" area of Mesoamerica, in an ellipse formed by the states of Tabasco, Oaxaca, Puebla, Mexico, Tlaxcala, and Hidalgo.

The literature cites the appearance of fired brick at one further site, several hundred miles to the north and west of Tula. In 1908, Dr Manuel Gamio, late Director of the Instituto Indígenista Interamericano, but then a student, carried out a brilliant exploration of the site of Chalchihuites in the State of Zacatecas.[32] The site appears to be very extensive: it consists in part of a series of caverns, some of which are natural and some modified, of various defensive works, and lastly, of a number of artificial mounds.

Only one mound has been exposed (called by Dr Gamio "Alta Vista" after the adjacent rancho). It contained a structure which displayed an eclectic use of materials, among which were listed: two kinds of stone, two kinds of mortar, wood, adobe and bricks. The latter two materials were described in the original report as:

> . . . The adobes found there have the following dimensions: length, 89 centimeters; width 10 centimeters. The regularity of these measurements in nearly all those which I examined, induces one to believe that they were made in frames or molds.
>
> The bricks are of the same dimensions, from which I imagine that they may be the aforementioned adobes that received appropriate baking, since the color is of a vivid red and they present relative hardness.

The exposed walls appurtenant to the "salon" are a random construction of slabs, boulders, and adobes. The adobes, although of varying length and widths, are still very much in evidence. No bricks of the measurements given by Gamio were visible, although in at least two portions of the walls there can be seen blocks which agree generally with his description with respect to color and hardness. These blocks

31 Acosta, 1956, pp. 37-115; 1957, pp. 119-169.

32 Gamio, 1910, pp. 471-491.

vary in length from 28 to 46 centimeters, and have an average thickness of 14 centimeters; in most cases the width could not be determined since the blocks are mortared into and form a part of the walls. One of these blocks exhibits a fracture and it was possible to visually examine the interior; the block shows a suspiciously homogeneous structure and color. It is difficult to estimate the temperature and firing time which would be required to result in such even firing of so thick an object. Near the great stairway a roughly-shaped block was found which gives the appearance of having been fired, probably accidentally, since the color is noticeably uneven. Dr Gamio's report on the original excavation drew attention to the evidences of a great fire at "Alta Vista"; upon removing the debris which filled the salon there appeared everywhere ashes, carbonized wood, partially incinerated human remains and traces of fire on floor and walls.

PROBLEMS OF FIELD IDENTIFICATION

Before setting forth any conclusions it might be useful to discuss briefly several of the problems encountered in attempts to verify, on the ground, sightings of bricks reported as long as four hundred forty years ago. Most of the early reports came from travelers, observant but untrained in precise description, and it is often difficult to be certain that one is, in fact, seeing what they saw, where they say they saw it. Topography changes, as at Chalco and Iztapalapa, town names change, the village may no longer exist, and locations can be incorrectly assigned, as may be the case of Brantz Mayer and Texcoco. The objects themselves can have disintegrated or have disappeared from the site through looting. Of greater import, however, is that the original reporter, who in most cases was not an archaeologist and only rarely a scientist of any sort, wrote honest but inaccurate accounts of his visit.

There are a number of native materials which, to the untrained eye, greatly resemble brick. There are reddish sandstones, which lend themselves well to cutting into thin, rectangular slabs, and red volcanic rock, still called by its Aztec name "tetzontli," which can be dressed into brick-like blocks of dark red color. Mortared into a wall, with no opportunity to examine the porous interior, it can be rather easily mistaken for fired brick. Early chroniclers such as Sahagún[33] and Clavijero[34] refer to the ubiquitous use of tetzontli: from their accounts it would appear that this native rock was crushed, mixed with lime and sand, and utilized as building blocks for both temples and houses in pre-Conquest times. No reference is made by either of these writers to firing, so we can assume that the mixture was molded and dried in the manner of our modern cement blocks.

33 Sahagún, 1938, pp. 295-296.

34 Clavijero, 1917, p. 26, 266.

The red clay soils are a familiar feature of much of the Mexican landscape but their significance seems never to have been related to archaeology. Woolley's report on the Ur excavations[35] might be read with profit: he, Taylor, and others had identified certain crude bricks there as having been "lightly fired," due to their red color. A great deal has been published on the Southeast Asian laterites whose product is the unfired building blocks of the thousand-year-old temple of Angkor Wat. If laterite exists in Mexico it should logically be found in the hot humid locales of the Gulf Coast states of Vera Cruz and Tabasco, but the author has failed so far to find any published material on soil studies of the area. The town of Chalchihuites, built of local adobes, gleams so red in the Mexican sunlight that one wonders why "green stone" was chosen for its name; the definitive clues to the Chalchihuites "bricks" may lie in an analysis of the red clays of Zacatecas.

The field worker is confronted periodically with the problem of making a determination whether the firing is intentional or accidental. Intentional firing of parts of structures is encountered from time to time in Mexico (e.g., the fired floors described by Ekholm in the Panuco explorations[36] and by Porter at Chupícuaro[37]); there has been some speculation[38] that some walls have been intentionally fired. Unless the fired material is found in situ under circumstances that permit archaeological correlation, great care must be exercised, since the lone brick, or the heap of fired fragments, may be the result of accidental firing during a destructive conflagration. Señor Pedro Armillas states that in his excavations at La Quemada, State of Zacatecas, he found accidentally burnt adobe, but did not observe any occurrence of fired bricks. He says:

> . . . Since evidences of a destructive fire are widespread in these buildings, I would rather attribute to that accident any findings of the so-called fired bricks, unless the intentional firing were authenticated by unequivocal evidence.[39]

Even when bona fide bricks are found at the site described, great care must be used in evaluating their antiquity; every resource of archaeology must be brought to bear to determine their association with pre-Conquest stratigraphy. Technological advances in other sciences are bringing parallel developments in the field of archaeology; when perfected, techniques such as thermoluminescence (a method now being developed by Dr George C. Kennedy at the Institute of Geophysics in

35 Woolley, 1939, p. 130.
36 Ekholm, 1944, p. 499.
37 Porter, 1956, pp. 569-572.
38 Piña Chan, personal communication, January 14, 1959.
39 Armillas, personal communication, February 14, 1959.

Los Angeles with the aim of dating fired clay objects) can prove to be invaluable aids to the working archaeologist.

CONCLUSIONS

The pursuit of the present investigation into the occurrence of fired brick in pre-Conquest Mexico has revealed three areas of uncertainty: the questions of location and identification, of authenticity, and of antiquity.

The first of these questions, that of location and identification, appears to have been sufficiently discussed in those portions of the paper which deal with the sites of Texcoco, Chalco, and Chalchihuites. Verification of the presence of fired bricks at these sites awaits further archaeological investigation and correlation of the published data with the terrain.

The question of authenticity is not readily established by off-hand examination in the field. Clays, especially the secondary clays, are extraordinarily complex. This is equally true of the loams from which bricks and adobes are commonly made. Techniques exist for testing such materials in the laboratory but there appears to be no one simple test which can be used to determine firing when the crude clays are not available for comparative purposes. In view of the propensity of certain clays to harden under atmospheric conditions (laterites, catlinites, etc.) it would seem desirable that all "bricks" discussed herein should be subjected to adequate testing techniques.

With respect to the third question, that of antiquity, it seems certain that fired brick was used in some parts of Mesoamerica, principally in the State of Tabasco. A number of other sites discussed above are attested by able archaeologists to contain bricks manufactured and used in pre-Conquest times, based on competent archaeological data. However, there is no published evidence that materials from any of these sites have been subjected to adequate physical tests for firing.

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BERKELEY, CALIFORNIA

THE DEVELOPMENT OF THE AMBRYM AND PENTECOST KINSHIP SYSTEMS

LORENZ G. LÖFFLER

IN THEIR PAPER on the *Evolution of Ambrym Kinship*[1] Robert and Barbara Lane have tried to reconstruct former stages of the Ambrym kinship system by analyzing the kinship terms reported from several regions of Ambrym, especially those from Ranon. I think it rather difficult to accept their explanations and intend to show in this paper (1) why there are objections to the authors' reconstructions, and (2) how the system can be explained more adequately.

I

R. and B. Lane are primarily concerned with the system of kinship terms. They correlate its evolution with changes in the regulation of exogamy, neglecting other aspects of social structure as far as possible, especially avoiding the question what stimulated the assumed changes in the rules of exogamy. Even then, the reader would expect a little explanation of how these transitions were possible at all. I heartily accept the authors' point of view that kinship terms reflect the regulation of exogamy and that changes in these regulations (the primary marriage rules) will lead to new forms of the term-system, which, however, for some time continues to reflect the older rules, furnishing a most valuable instrument for reconstructing underlying systems of exogamy.[2] But I maintain that changes in the rules of exogamy cannot occur haphazardly or at random, and that new rules cannot be introduced deliberately. Their development must be consistent with a new situation to which they are adapted. This applies especially to a closed kin group system (with so-called "prescriptive" marriage), for there is but one group of marriage partners of but one classificatory degree of relationship.

In a four-section system, e.g., everybody must marry his cross-cousin; they belong neither to ego's patrimoiety nor to his matrimoiety. Everyone not belonging to one of these moieties is classed as a cross-cousin, and reciprocal cross-cousin marriage is unavoidable. Since mother's brother had to marry father's sister, the matrilateral and the patrilateral cross-cousins are identical, and it is impossible to prohibit marriage with the patri- or matrilateral cross-cousin only.[3]

The only new regulation which has been reported to develop from a four-section system is an eight-section system. R. and B. Lane suggest that this development was achieved by tabooing marriage with both first cousins and substituting

1 Lane and Lane, 1958.
2 Löffler, 1960.
3 Lane and Lane, 1958, pp. 128, 132.

other persons.[4] But this is equally impossible, since within a four-section system there are no marriageable "other persons." A distinction between first and second cousins is impossible, and a mother's mother's brother's daughter's daughter is actually a mother's brother's daughter in the same way as ego's father's son is actually ego's brother. The distinction between first and second cousins cannot evolve in a four-section system. It is the result of an achieved eight-section system. Equally, the taboo on first cousins cannot lead to an eight-section system, though an eight-section system must lead to this taboo. The extension of exogamy is a consequence of the existing system, not vice versa.

Since the authors' concern is not the development of an eight-section system, but that of a six-section system, I will not demonstrate here how a transition from a four-section system into an eight-section system becomes necessary when the rules of residence are changed while the old regulations of exogamy (against marrying into one's father's or mother's localized moiety) are retained. A process similar to that will be demonstrated below, and the transition to an eight-section system will become easily comprehendible when the same principles are applied to a four-section system.

As to the development of the kinship system in Ambrym, the authors themselves seem to suggest that the change from their assumed four-section system to a six-section system was not achieved by an internal process alone, but that a third patrilineal group was added to the existing two patrilineal moieties.[5] This development seems extremely improbable. If an outsider marries someone belonging to a certain section, then all his relatives will be classed like those of the possible marriage partners of the section member, i.e. he or she and his or her kin will automatically be incorporated into the section system. This process has been amply reported from Australia. There is absolutely no reason why girls of moiety A should continue to marry boys of moiety B, whereas the girls of B start marrying no one but boys of an outside section (C), whose girls, instead of marrying their partners of their own four-section system, start marrying only boys of A. It is necessary that the C members break all connections with their former system partners, lest everybody have two different kin groups to marry into, starting a system which Lévi-Strauss called "échange généralisé."[6] The whole religious and social system based on dualistic concepts has to be overturned: a rather unbelievable revolution.

Let us now consider the second stage of transition proposed by the authors. Given a system of three patrisibs, marrying A-B-C-A, and of two intersecting

4 *Idem*, p. 131.
5 *Idem*, p. 130.
6 Lévi-Strauss, 1949, p. 291.

matrimoieties, marriage with the matrilateral cross-cousin must be obligatory. Every marriageable girl is necessarily classed as a matrilateral cross-cousin. The authors assume that for an unknown reason the people decided to taboo henceforth marriage with just this matrilateral cross-cousin. The effect is rather obvious: no one will be able to marry anyone. According to the authors, sister exchange should result, but I cannot imagine where these sisters could be taken from. They say that with three patrisibs, if marriage is forbidden into ego's father's sib and into ego's mother's patrisib, one sib remains.[7] This cannot be true. Even if sib C is neither a male ego's father's (A) nor his mother's (B) patrisib, his own sib (A) is a mother's patrisib for every girl of sib C. If female C is prohibited from marrying male A, then male A cannot marry female C. Either the one-direction rule did not exist at all or the assumed sib of marriageable partners is a fourth sib.

Equally mistaken are the authors in their indication that a taboo on mother's brother's daughter is a sign of strengthening the patrilineal idea. Marriage with the matrilateral cross-cousin is common in strongly patrilineally organized societies (Omaha systems). The development of a six-section system out of a three-sib system cannot be explained by a strengthening of the patrilineal idea. Probably it cannot be explained at all since a six-section system without sister exchange has never been reported to exist and cannot have existed in Ambrym.

As to the authors' first hypothetical stage of Ambrym kinship organization, the (bilateral) generation type system, they do not demonstrate its transition into the alleged four-section system. Their reason for leaving the question open is obvious: sister exchange and marriage with both cross-cousins may (or must) be practiced in both systems, and no change in the regulation of exogamy can account for such a transition. The authors state that there is growing evidence beyond the scope of their paper which indicates an underlying generation type system in the central and northern New Hebrides. There is also evidence in the kinship-term systems of Ambrym, though the authors list the points in question under another heading.[8] There are indications of former marriage with both (first) cousins, and the sister exchange terminology is prevalent all over Ambrym. In most places, the grandparents are called by a single term, although they belong to four different sections, etc.[9]

If there is any evidence certain from the kinship terms which covers all reported systems, it is a prior stage where sister exchange was practiced and where grandparents and grandchildren were classed according to their generation and not according to sections. Assuming that the cross-cousins were marriageable partners,

7 Lane and Lane, 1958, p. 123.
8 *Idem*, pp. 127, 128.
9 *Idem*, pp. 118, 119.

there might have existed a system in which two kin groups of either patri- or matrilineal descent exchanged marriage partners. An appropriate kinship-term system may be reconstructed without difficulty. Like R. and B. Lane I use the Ranon system, although the other systems lead equally well or even better to this reconstruction. The modern system is diagrammed in Figures 1 and 2.

To rearrange the terms into a simple dual system, only few changes have to be effected. They are fewer than those needed for the reconstruction of a six-section system without sister exchange. Apart from the common term for all grandparents, no changes are necessary in the ascending generations. In the descending generations, only affinal degrees have to be rearranged. In ego's generation, the affinal terms will replace the modern terms for the cross-cousins and their apparently secondary equation with grandparents or grandchildren. The term *wunyug*, referring to a person's own parents-in-law, and probably not of classificatory significance, has been omitted. *Tug* for brother's children (w.s.) is indicated by the Sulol and Olal system where it is used still today. There are no indications for a special lineal arrangement (see Fig. 3).

II

The system of kinship terms reconstructed above might be consistent with a dual system. If patrilines (A, B) and matrilines (1, 2) were recognized, a man might not be allowed to marry into his father's patriline (A) nor into his mother's matriline (1). There remain only two lines, B and 2, and it is they to which his cross-cousins belong. If ego is A1, then his father and his father's siblings are A2, his mother and her siblings are B1, ego's wife must be B2, his children are A2, etc. Thus, within this closed dual system, the distribution of lines is practically the same as within a four-section system.

In the modern system, ego marries his mother's brother's daughter's daughter or a girl of the corresponding section. In the above system, this girl would belong to A2, i.e. she would not be marriageable, and by adding a new prohibition she would be even more prohibited than before. This again proves that a four-section system cannot have preceded the present system. To be marriageable according to an old system, she should belong to B2, and if she did, ego's mother necessarily had to belong to A1 (because the B2 girl is her brother's daughter's daughter). But ego was A1 as well; i.e. if a man was going to marry his MBDD,* he must have belonged to his mother's matriline and his mother's father's patriline, but to none of the lines of his father. The girl, on the other hand, must have belonged to her mother's matriline and to her father's line, else a father would have been

* Abbreviation of kinship terms is by initial letter of the English word except that *sister* is indicated by the terminal letter.

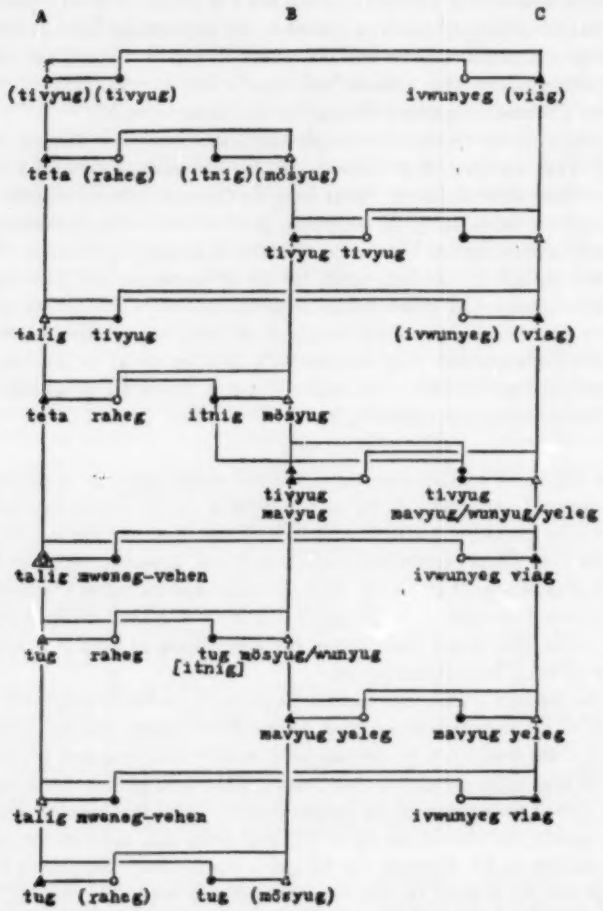

FIG. 1. The man's set of kinship terms (Ranon system). A,B,C, patrilines (corresponding to R. and B. Lane, 1958, fig. 2). The terms in parentheses were supplied by the present author. Solid symbols indicate the opposite moiety.

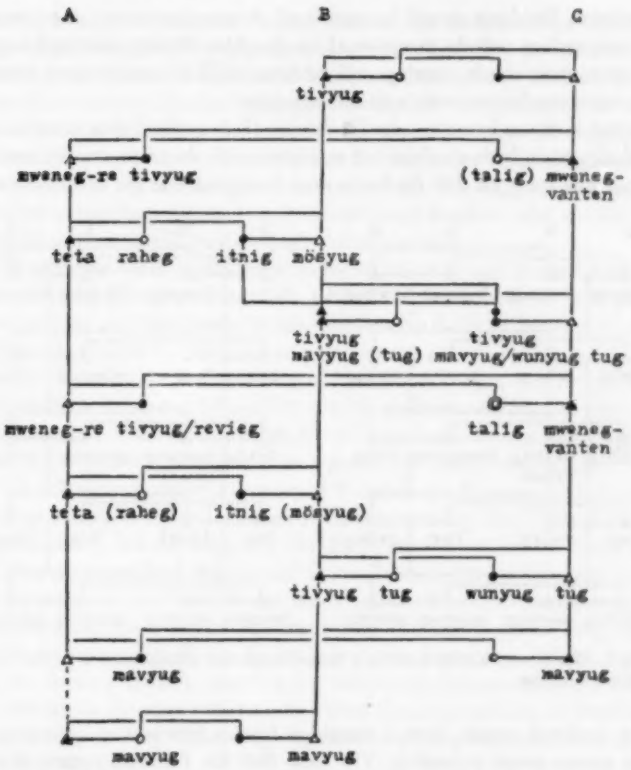

FIG. 2. The woman's set of kinship terms (Ranon system). A,B,C, patrilines (corresponding to R. and B. Lane, 1958, fig. 3).

able to marry his daughter as he married her mother. This father's "line" is no patriline, since the son does not continue it. It goes from father to daughter to daughter's son to daughter's son's daughter, and it cannot account for any lineal structure. There may have been an undefined number of these "lines," and no patrimoieties were possible. The political structure must have depended on the matrilines. Two of these lines in a dual arrangement correspond to the system of kinship terms: in a closed kin group system they will be represented by two

matrimoieties. Residence should be matrilocal. A man may marry any woman of his opposite moiety with the exception of his daughter. Moiety sister exchange will be necessary, cross-cousin marriage will be common. The reconstructed system of kinship terms may be consistent with this structure.

Having to choose between a double descent (four-section) system and a matrilineal dual system, both of which are consistent with the reconstructed system of kinship terms, I suggest that the latter must be regarded as the antecedent of the

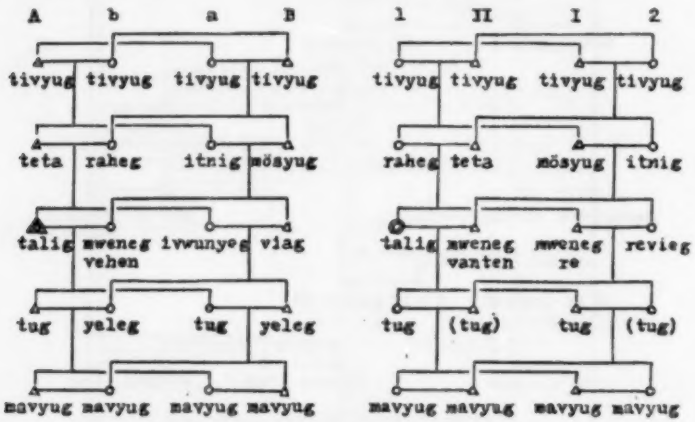
A b a B
tivyug tivyug tivyug tivyug
teta raheg itnig mösyug
talig mweneg vehen ivwunyeg viag
tug yeleg tug yeleg
mavyug mavyug mavyug mavyug
1 II I 2
tivyug tivyug tivyug tivyug
raheg teta mösyug itnig
talig mweneg vanten mweneg re revieg
tug (tug) tug (tug)
mavyug mavyug mavyug mavyug

FIG. 3. The Ranon kinship terms in a reconstructed dual arrangement. *Left*, the man's set. *Right*, the woman's set.

modern Ambrym system, since a transition from a four-section system to a six-section system seems unfeasible. The view that the Ambrym system developed from a matrilineal dual system was also expressed by Seligman.[10] Seligman showed how the transition might have been possible: I intend to show why it was necessary.

Today in Ambrym residence is patrilocal with considerable village exogamy.[11] Consequently, local descent lines are patrilineal. In former days, under the matrilocal conditions of the matrilineal dual system, local descent lines were necessarily matrilineal. Since the moiety was an exogamous unit (as it is still today) local groups had to be exogamous. Under the conditions of shifting residence rules, the exogamous matrimoieties continue to exist, but they cease to be localized. The exogamous local descent lines become patrilineal; ego's mother's local matriline

10 Seligman, 1927, p. 358.

11 Lane and Lane, 1958, p. 109.

(into which he is forbidden to marry) becomes his mother's local patriline. If a man is forbidden to marry into his mother's natal locality, i.e. members of his mother's patriline, then he will be unable to marry his mother's brother's daughter, and insofar as mother's brother's daughter is identical with father's sister's daughter, and since he belongs to her mother's local patriline, ego will be prohibited from marrying both his cross-cousins. But he can marry their daughters if his cross-cousins live virilocal in a place different from that of their parents. These cross-cousins may have married ego's classificatory brothers who do not live in his (ego's) or their (ego's cross-cousins') father's locality.

This situation must be also explainable in terms of ego himself marrying a cross-cousin who belongs neither to his father's nor to his mother's local patriline. On no account can this cousin be his mother's brother's or his father's sister's daughter! To analyze the situation existing between second cousins, let us assume two matrimoieties (1, 2) and a number of local patrilines (A, B, C, etc.). If ego's father's father's father was 1A and his wife 2B, their son was 2A. He should have married a woman of another local line (C or D, etc.) and the opposite moiety (1). His son (ego's father) then belongs to 1 and A and cannot marry into C (or D, etc.). He will have to marry a woman of 2 and B (or E, etc.), so that ego and his siblings belong to 2 and A and are forbidden to marry into B (or E, etc.).

Ego's father's father's sister was like her brother a member of 2 and A and could not marry into B. If she married C (or D, etc.), her son belonged to 2 and C (or D, etc.) and was forbidden to marry into A. Therefore he married a wife of 1 and B (or E, etc.), and his children belong to 1 and C (or D, etc.), and are forbidden to marry into B (or E, etc.), but they can marry A2, i.e. ego may marry his father's father's sister's son's children = father's mother's brother's son's children. In the same way it can be shown that, on condition of classificatory sister exchange, no possible marriage regulations exist between the other types of second cross-cousins.

These conclusions are corroborated by the actual marriage regulations in Ambrym.[12] There is not a single exception nor any additional possibility. This proves that a regulation of exogamy by which marriage is allowed with MBDC = MFRC, FRDC = MMBC, and FMBSC = FFRSC arises when the rules regulating exogamy in a matrilineal dual system with matrilocality are adapted to the conditions of patrilocality. The new rules are in fact nothing but the old rules retained under the new conditions.

The number of matrilineal local lines of the dual system having been *n*, the number of patrilineal local lines in the new system will be *n* as well. In fact ego

12 Lane and Lane, 1956.

will not start reckoning, whether his marriage mates are first, second, or whatever cousins or cousins' children, but will simply have to look for a local line which is neither his father's nor his mother's local patriline. From the remaining $n-2$ lines he may choose any girl who does not belong to his mother's moiety and for whom he does not belong to her mother's local patriline. The smallest number of local lines necessary for the system to function is three (ego's mother's patriline = his wife's mother's patriline), but there is no upper limit.

With the establishment of the new system the local patrilines may be called sibs. Within each sib there are two sections, one belonging to ego's moiety, one to the opposite moiety. The minimal number of three sibs then will embrace six sections. These six sections may marry amongst each other, but each sib may also partake in other six-section systems. From a classificatory point of view, there can be no more than six sections for ego, for though he and his siblings may marry *de facto* into different sibs, *de jure* the members of these sibs will all belong either to the section which embraces his classificatory marriage mates (and their fathers' fathers and their sons' children) or to the section which embraces the children of his siblings of the opposite sex and his spouse's father('s siblings). Thus, the six-section system must be regarded as a classificatory scheme: that actually three sibs marry round about only amongst each other need not constitute the rule. This conclusion is corroborated by the further development reported by Deacon for southern Ambrym.[13] Here no term for "moiety" exists. If the intermarriage of three sibs would constitute the rule, the notion of the two moieties would always be present. But if ego marries into an undetermined sib, then it is only postnuptially that moiety relations and equations are established. With no equation of moieties existing before marriage, ego is free to marry any girl he likes. Classification is optional in a multi-sib system, and two classificatory brothers of one sib may in effect marry two classificatory sisters of another sib, though of different moiety. Prenuptial moiety equations lacking, postnuptial moiety affiliations may contradict each other, and the resulting affiliations cannot be called moieties any longer but are just a set of matrilines differing for each group of actually related persons. Marriage being regulated by the prohibition against father's and mother's sib, the only function of the matriline is to prohibit marriage with a daughter's daughter (resp. mother's mother) which by itself is rather improbable. And if, as I suggested, the function of the matrimoiety in the six-section system is implicit, not explicit, then the rôle of what once had been a matrimoiety is practically extinct and can be neglected and forgotten, as was the case in southern Ambrym.

13 Deacon, 1927, p. 333.

III

The development of the kinship term system from the simpler stage reconstructed above (fig. 3) to the complicated modern form (figs. 1, 2) can be explained easily by a transition from the matrilineal dual system to the six-section system. Terms which cover the same degree of relationship need not be specially discussed. Most of the equations of affinal and consanguineal relations having changed, the old significance of the terms was kept for the relatives nearest to ego, married or unmarried. Hence *itnig* still refers to father's sister, but no longer to wife's mother (or more exactly to sibling's spouse's mother; ego's own mother-in-law was probably *wunyug*); *mõsyug* remained mother's brother, but not (sibling's) spouse's father; *yeleg* remained sister's child (m.s.)/wife's brother's child, but not daughter's husband or son's wife; and *vehen* and *viag (vanten* and *revieg)* remained the terms for the possible marriage mates (or spouse's siblings = siblings' spouses) and could no longer designate the cross-cousins (if they ever did).

It was usual to call relatives who had to be renamed by the same terms as their section mates. A man's children-in-law belong to the same section as his mother's brother/father's sister's husband and mother/father's brother's wife, i.e. the section of *mõsyug* and *raheg*. No other terms in this section being available, the children-in-law (m.s.) and their siblings were called *mõsyug* and *raheg* as well. For a woman, her daughter's husband belongs to the section of her mother's father and is accordingly called like him *tivyug*. A woman's daughter-in-law is not called *tivyug* but *wunyug*. This term shall be considered later, but that son's wife (w.s.) should not be *tivyug* is plausible since this term, though used for both sexes, relates in the first instance to a married couple and not to siblings. This explains why tertiary relatives of the second ascending generation who had been equated with the secondary relations in the old system, and who now belong to a different section, are not called *tivyug* but according to their new section membership. The only departure reported is father's mother's brother (w.s.) who, instead of being equated with mother's father, enters the section of the husband and is classed with him.

The difference in the terms used by man and woman for their children-in-law results from the different section membership. For a woman they belong to the same section as her father and his sister (for they are their grandchildren in the paternal line), and are called *teta* and *itnig*. The terms used for the parents-in-law correspond to those used for the children-in-law. If a man calls his daughter's husband *mõsyug*, then the reciprocal term is *yeleg*, and actually a wife's father belongs to the *yeleg* section. Consequently he is called *yeleg*. If a man calls his son's wife *raheg*, then the reciprocal term is *tug*, and actually a husband's father belongs to the same section as a woman's children. Consequently he is called *tug*.

But a person's mother-in-law belongs neither to the *yeleg* nor to the *tug* section, and she is called *wunyug* as she used to be called in the old system. Equally, a wife's father, besides being called *yeleg*, is still called *wunyug*. I mentioned that a woman's son-in-law had to be called *tivyug*, whereas a corresponding term for women was lacking in this section except for *wunyug*, a husband's mother. Therefore, a son's wife (w.s.) had to be called *wunyug* as well, making the term reciprocal as it is between male persons.

The rearrangement of *tivyug* (and the reciprocal term *mavyug*) in the second ascending (resp. descending) generation has been amply discussed by R. and B. Lane,[14] so that no further explanation seems necessary. There remains but one question: the terms used for the cross-cousins. A wife's mother can be a female cross-cousin. She could accordingly be called *wunyug*, but this usage does not seem to prevail, and the term cannot be applied when classificatory cross-cousins are concerned. Instead, father's sister's children are called *mavyug* (i.e. grandchildren) and mother's brother's children are called *tivyug* (i.e. grandparents). But I miss an indication by which term ego's classificatory cross-cousins are designated, since he has no possibility of distinguishing between children who are at the same time his (classificatory) mother's brother's and father's sister's children. They all belong to the same section, and if there is no distinction between those older and those younger than ego, he must either call them *tivyug* or *mavyug*, so that in the long run one of these terms must come to designate all cross-cousins.

The question arises how ego came to distinguish between his patrilateral and his matrilateral cross-cousins at all. There is absolutely no possibility of explaining this distinction as a consequence of the classificatory system. This distinction is possible only in relation to ego's real consanguineal cross-cousins. Under the conditions of the old system, a man was actually more closely related to his mother's brother than to his father and his father's sister, who, though necessarily marrying her brother's wife's classificatory brothers, need not have married her actual brother-in-law. Thus, ego will be able to distinguish between his cross-cousins on his mother's side and those on his father's side. The former are by far more important than the latter, since their father is ego's mother's brother who retains his importance even under patrilocal conditions. Mother's brother's children belong to a man's mother's patrisib. Father's sister's children belong to a sib which need not be related to a man's own sib other than by his aunt's marriage. If, accordingly, the cross-cousins are to be classed differently, then the mother's brother's children should be classed as grandparents but the father's sister's children (reciprocally) as grandchildren.

14 Lane and Lane, 1958, pp. 115, 116.

This is actually the case in Ranon and Olal. But—I again stress the point—this distinction is only possible as long as real cross-cousins (or members of mother's sib) are concerned. All persons who belong to the cross-cousin section just by classification can be called by one term only, so that a general term will at last replace the special (non-classificatory) distinction, be it "grandchildren" as in Linbul or "grandparents" as in Balap, Port Vato, and Southeast Ambrym. The more progressive forms may be seen to exist in the southern part of Ambrym, a fact which corresponds to the development of the matrimoiety mentioned above.

To sum up: the whole terminology used today in Ambrym is the necessary (or possible) result of the adjustment of the old sets of terms to the new six-section system. There are absolutely no exceptions which ought be explained by a system without sister exchange, asymmetrical regulation of exogamy, or by a four-section system.

IV

According to Seligman's analysis,[15] a system similar to that of Ambrym, insofar as it contains six "marriage classes," may be assumed to exist in Pentecost. Having read and commented on Deacon's record of the Ambrym system, Seligman reëxamined Rivers' notes on the Pentecost system which is characterized by dual organization with matrilineal descent, each moiety containing three subdivisions. But contrary to Ambrym, reciprocal marriages are prohibited. I have tried every way possible to make the Pentecost rules fit into a six-section system (without sister exchange) or any other system based on double descent. But the only system which might conform with the Pentecost marriage regulations, a nine-section system, is ruled out by the matrilineal dual division. Only one alternative remains: the three subdivisions of each moiety must be matrilineal as well. Murdock's classification of the Pentecost system as a double descent system[16] cannot be accepted.

In fact, Seligman did not endeavor to construct a six-section system. She proposed a system of six matrisibs within two matrimoieties. Each sib marries into only one of the other sibs, and in one direction only, so that a descendant in the male line of the seventh generation will belong to ego's sib again. Every second sib belongs to the opposite moiety. A man's marriageable partners always belong to his mother's brother's wife's sib, although even within this sib there are several women whom ego cannot marry, e.g. his daughter and his mother's brother's daughter. According to Seligman, these persons "cannot be regarded as mates for reasons which would be familiar to everyone."[17] But we are quite familiar with matrilateral cousin marriage. To be sure, if ego marries his mother's brother's

15 Seligman, 1928.

16 Murdock, 1949, pp. 247, 342.

17 Seligman, 1928, p. 538.

daughter's daughter, then his cross-cousin is his mother-in-law whom a man generally does not marry, but this does not explain why this woman, instead of becoming ego's mother-in-law, should not have become his wife. And even if a man may marry his mother's brother's wife, this provides no explanation why he should not marry his classificatory cross-cousins.

Equally, I disagree with Seligman in her assumption (stimulated by the analysis of the six-section system of Ambrym) that the tripartite division of the Pentecost

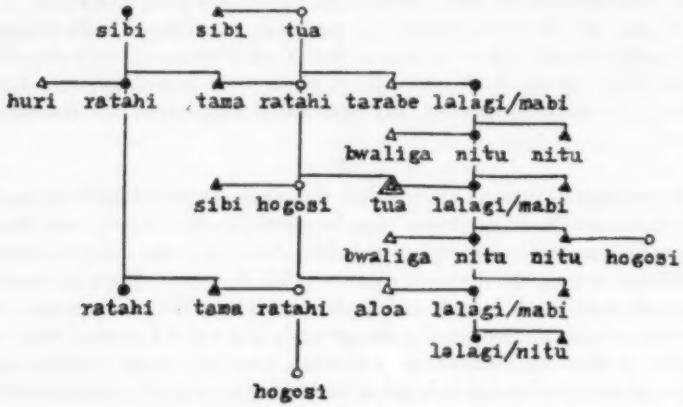

FIG. 4. The man's set of kinship terms (Pentecost system).

moiety resulted from partial recognition of patrilineal descent,[18] because there is absolutely no chance of establishing matrilineal sibs and of prohibiting marriage with the female descendants of father's sister if a recognition of patrilineal descent by men were introduced into a matrilineal dual organization.

To provide a new explanation, let me start with an analysis of the system of kinship terms. Instead of listing the terms, I enter them into a genealogical diagram suggested by their distribution (Figs. 4 and 5). The distribution of kinship terms clearly indicates that the system is based on a very special marriage regulation by which mother's brother's daughter's daughter is ego's appropriate wife. The other women whom ego can marry in his wife's matriline are called, like her, *lalagi* (potential spouse). Excluded are ego's mother's brother's daughter and his own daughter. If patrilines were recognized, these two women would belong to ego's and

18 Seligman, 1928, pp. 547, 548.

his mother's patriline, and there might be a prohibition to marry into these lines. But this regulation, whether applied to men only or to both sexes, cannot be made responsible for the marriage prohibition against the patrilateral cross-cousins, because, contrary to Ambrym, these patrilines cannot keep fixed marriage relations or prohibitions, else ego's father could not have married ego's mother. Moreover, the prohibition against marriage with father's sister's daughter's daughter would remain unexplained.

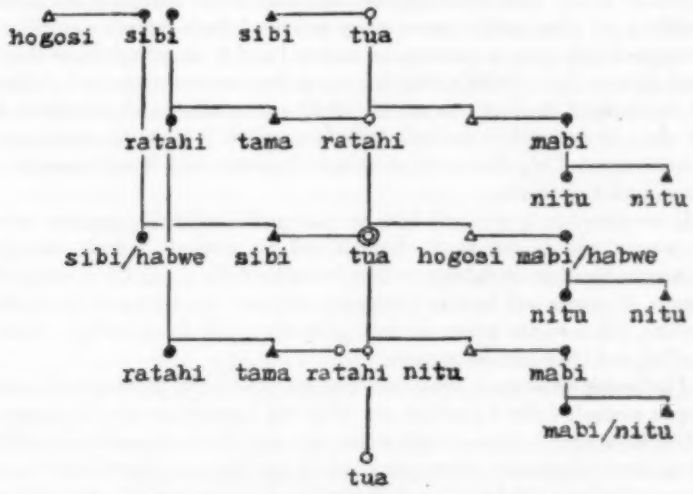

FIG. 5. The woman's set of kinship terms (Pentecost system).

A far better solution is provided by the assumption that ego is prohibited from marrying into his father's matriline. All prohibitions mentioned up to now are covered by this single rule. A regulation by patrilines need not be assumed at all. For a male ego this rule excludes marriage with his father's sister's daughter and her daughter. For a female ego it excludes marriage with her father and her father's sister's son. Since for the latter she is his maternal cross-cousin, a man can marry only his mother's brother's daughter's daughter. There is but one point of discrepancy with the kinship system: according to Rivers a man may call his sister's son's duaghter *lalagi*, but if she is forbidden to marry into her father's matriline, then ego cannot marry her. As the terms *nitu* (child) and *lalagi* (wife) exclude each

other in every other position, I suppose that *lalagi* for sister's son's daughter is a misapplication, and that, in consonance with the general rule, she cannot be married by ego.

There remains another more important question. The prohibition against marriage into one's father's matriline does not explain why a male ego cannot marry (1) his mother's brother's son's daughter, and (2) his mother's father's sister's daughter. There are two possible explanations: either the matrilines form a closed sib system (only three sibs exist: if a man cannot marry into his father's matrisib, a girl consequently cannot marry into her father's father's matrisib, and marriages of both types in question, i.e. such as 1 and 2, are excluded), or there is a dual division (ego's father's sister belongs to the same moiety as ego's children, and marriages of the first type are excluded) and an additional prohibition for men alone to marry their mother's father's matriline (preventing marriages of the second type). Only the second possibility is consistent with Rivers' statement of a matrilineal dual division.

If we accept it, a man will have to distinguish within his opposite moiety (1) women who belong to his father's and his mother's father's matriline, (2) women for whom he belongs to their father's matriline, and (3) marriageable partners. A woman will have to distinguish (1) men who belong to her father's matriline, (2) men for whom she belongs to their father's or mother's father's matriline, and (3) marriable partners.

The kinship terms are in remarkable consistence with this grouping: all persons of ego's mother's father's matriline are called *sibi* (grandparents); all persons of ego's father's matriline (except father's mother) are called *tama* and *ratahi* (father and mother); all persons with respect to whom ego belongs to their father's matriline are called *nitu* (children); and all persons with respect to whom ego belongs to their mother's father's matriline are called *mabi* (grandchildren). A male ego may marry his *mabi* (then called *lalagi*), but not his *sibi;* a female ego may marry her *sibi,* but not her *mabi;* and the *tama-ratahi-nitu* group constitutes a classificatory family. I suppose that it is this (amitalineal) "family" which is designated by the term *verana.*[19] According to the system, each person will have to distinguish within his opposite moiety (1) members of his *verana,* (2) members of a group whose men marry women of his own group *(sibi),* and (3) members of a group whose women are married by men of his own group *(mabi).* Sister exchange will be impossible under these conditions. I suggest that the three "subdivisions" of each moiety, mentioned by Rivers, are formed by these three categories of mem-

19 Rivers, 1914, vol. 1, p. 189.

bers of the opposite moiety which must exist for everyone, differing from sibs in that they cannot form stable units nor a closed system.

The kinship term system is nearly consistent with the *verana*-structure. *Sibi* (grandparent, instead of *ratahi*, mother) for father's mother and *mabi* (grandchildren, besides *nitu*, children) for son's children (w.s.) (corresponding to the exception *lalagi* for sister's son's daughter [m.s.], instead of *nitu*) indicate a prior stage of distribution of kinship terms. The woman's set of terms lends itself very well to a reconstruction of a simple dual arrangement (see Fig. 6).

Nearly every term has a phonetic and semantic relationship to the reconstructed Ambrym system (Fig. 3). But, contrary to Ambrym, special terms for parent's siblings of the opposite sex are lacking. It will be noted that *ratahi* = father's sister (m. and w.s.) is reciprocal to *nitu* = brother's children (w.s.). *Hogosi* (originally "sibling of opposite sex") for mother's brother (w.s.) is suggested by its modern application to husband's father and (reciprocally) son's wife. This usage surely does not indicate marriage between a man and his father's sister (his *ratahi*) or a woman and her brother's son (her *nitu*), but if *hogosi* were reciprocal between mother's brother (w.s.) and sister's daughter (m.s.), and if a man's son married his sister's daughter, then *hogosi* had to be applied to husband's father and son's wife as well. In the wife's terminology, husband's sister is equated with brother's wife (the term is reciprocal). A corresponding term is lacking in the man's set. Probably *huri* took its place (cf. *huruk* MBC and MB in Sulol, *huri* FRH and FRDH in Pentecost); today the pair *sibi-mabi* (cf. Ranon *tivyug-mavyug*, cousins) is used instead.

Following the indications given by the kinship terms, we may conclude that the old Pentecost system was very similar to that of old Ambrym. There can be little doubt that it was based on matrilineal descent, matrilocality, and cross-cousin marriage. A similar change in the rules of residence like that of Ambrym should have led to a similar section system. But, as I have shown, there are no indications of a patrilinealization of the Pentecost system. Nevertheless, the transition from the old to the new system should be explainable by a process corresponding to that of Ambrym. The fact that in the modern Pentecost system of kinship terms a man calls his father's sister's son as he does his father and his fathers' sister's daughter as his mother (and probably a sister's husband and his sister as his own mother's parents), i.e. that pairs of siblings are called like their maternal uncle and his wife, leads me to suggest avunculocal residence. This assumption will be confirmed, when the change in the regulation of exogamy can be shown to be the result of a transition from matrilocal to avunculocal residence.

With reference to Ambrym, I maintained that the old matrilineal and matrilocal dual system prevented a man from marrying a girl of his mother's moiety and (consequently) locality. Under avunculocal residence, ego's father's sister's children will live with their maternal uncle and his wife, who are ego's parents. Consequently, ego cannot marry his father's sister's daughter who is a member of

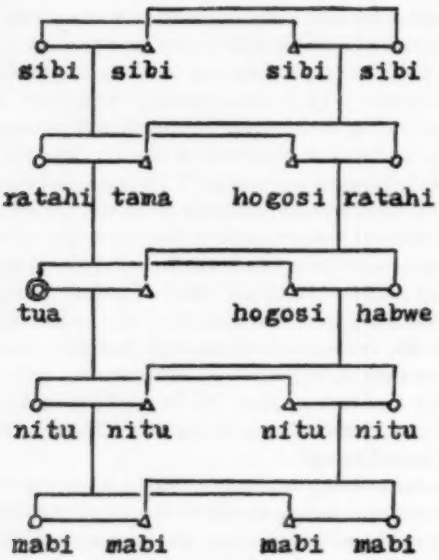

FIG. 6. The woman's set of terms in a reconstructed dual system (Pentecost).

his mother's locality where he cannot take a wife. The same relation exists between ego's sister and his father's sister's son or, reciprocally, between his mother's brother's daughter and himself. Moreover, ego cannot marry his father's sister's daughter's daughter, since she lives with her maternal uncle who (being ego's patrilateral male cross-cousin) lives in ego's father's = ego's mother's locality. The daughters of his male cross-cousins belonging to ego's own moiety, there remains only mother's brother's daughter's daughter. She lives with ego's mother's brother's son who himself lives with ego's mother's brother's wife's brother and his wife. No forbidden locality relations existing, ego may marry her.

Her brother, on the other hand, might marry ego's sister, if there were not another prohibition by which a man cannot marry his mother's father's sister's daughter who, according to the new locality rules, lives in ego's mother's father's = mother's mother's place. Apart from the identification of local line and descent line, a girl living in ego's mother's mother's house represents something like his grandmother's secondary daughter or his own "step-mother" and cannot be married. For a woman the situation is different. Her mother's father's sister's son, living with her mother's mother and being a secondary son to her, cannot be called this female ego's "step-father," since he is only her "step-mother's" brother. By marrying this man, the woman reëstablishes part of the old residence rule, since when residence was matrilocal, a woman always lived (together with her husband) in her mother's and hence mother's mother's place. These two points may explain why the rule not to marry into one's mother's mother's place (= mother's father's matriline) was restricted to men only. Without this restriction, not a single first or second cousin or cousin's child would have remained marriageable, whereas, by now, a man may only marry either his MBDD or his MMBDD. This regulation may be seen to be consistent with the arrangement of the kinship terms.

Thus, as in Ambrym, the extension of exogamy, i.e. the persons covered by its regulation, of the modern Pentecost system differs from that of the hypothetical former simple moiety system not because of an introduction of new exogamous regulations, but because the old rules of matrilineal local exogamy were retained under the conditions of avunculocal residence.

The kinship terms were adjusted accordingly. Ego's cross-cousins being no longer marriageable partners, had to be called by new terms. Father's sister's daughter living in the house of ego's *ratahi,* her mother being called *ratahi,* and no other term being available, she was called *ratahi* as well, and her brother was called like the man in whose house he lived, *tama.* The terms between cross-cousins being reciprocal, mother's brother's children had to be called *nitu.* Ego's mother's brother's wife was no longer his father's sister; to distinguish her from the paternal aunt *(ratahi)* ego called her *lalagi* or *mabi,* since she belonged neither to ego's nor to his mother's or mother's mother's local line, but to his opposite moiety, and ego could marry her after the death of her husband. A woman still called her husband's father (and he his son's wife) *hogosi,* but they were no longer mother's brother (w.s.) or sister's daughter (m.s.), and new terms are lacking. Sister's husband, being no longer mother's brother's son, was called like the man in whose house he lived, *sibi.* Reciprocally, wife's brother was called *mabi.* The terms *sibi* and *mabi* having thus become designations for the members of the opposite moiety standing in father's matriline relation to ego, the persons called *sibi* and *mabi* in ego's own

line had to be renamed. A woman living postnuptially in her mother's mother's house and marrying a man of the same line as her grandfather, mother's mother, sister, and sister's daughter's daughter could be called by the same term, at least in the woman's set *(tua)*, a man taking over the term for mother's mother from his sister's terminology.

If residence shifts from avunculocality to patrilocality no new marriage regulations will result, as ego's only marriageable partner, (mother's) mother's brother's daughter's daughter, remains marriageable, whether ego is allowed to marry into his and his mother's patriline or not (v.s.). As long as the old rules of exogamy are not changed voluntarily, marriage with the members of ego's father's matriline remains prohibited. No six-section system can develop, and even the formation of exogamous patrilineal sibs is prevented by the combination of exogamous rules resulting from the coëxistence of matrimoieties and the amitalineal *verana*—"clans."

V

Regarding Ambrym, I have tried to show that the reconstructions proposed by R. and B. Lane are neither necessary nor possible. Since neither a four-section system nor a three-sib system may be taken as a basis of the modern Ambrym system, I myself followed the last suggestion of the authors and started with a dual system as indicated by the kinship terms. But the structure of this dual system must have differed from that of a four-section system. By testing the modern lineation, I received indications of a dual division on a matrilineal basis without intersecting patrilineal formations characterized by matrilocality, possible sister exchange, and cross-cousin marriage. A comparison of this matrilineal dual system with the modern Ambrym system showed that residence rules must have changed. Why they changed cannot be determined by an analysis of the kinship system; but my conclusions that they were the first to change in the system of the old society is corroborated by the evidence which Murdock gained from his material of samples all over the world.[20] Since local exogamy was necessary in the old system and still may be found today, exogamous local patrilines must have originated when residence became patrilocal. Thereby, because the old rules of exogamy were retained, the persons (and consequently the relationship degrees) covered by these rules changed, and the marriage regulations resulted in the modern system. This system must be understood as a classification scheme applicable to an undefined number of sibs based on patrilineal descent.

Regarding Pentecost, I have tried to show that the system proposed by Seligman is neither necessary nor able to explain the regulations recorded by Rivers. From

20 Murdock, 1949, pp. 212, 221.

an analysis of the kinship terms, I arrived at the idea that the development of the Pentecost system started from a matrilineal basis similar to that of Ambrym. A comparison of the old and the modern lineation showed that no regulations based on patrilines had to be assumed, but that the change must have been due to a prohibition of marrying into father's matriline and (men only) into mother's father's matriline. Following the indications given by the kinship term system and paying special heed to the "family" structure of the *verana*, I assumed that avunculocality must have replaced former matrilocality. This assumption was corroborated by the fact that the old rules of exogamy, if retained under the conditions of (prenuptially) avunculocal (postnuptially virilocal) residence, resulted in the same system of marriage regulations which can be deduced from the modern kinship term system. A further change to patrilocality could be shown to remain without influence on the marriage rules and the matrilineal structure of the descent groups.

Allowing for special derivations and deviations the following general rules may be abstracted: Given a system based on exogamous matrimoieties without intersecting patrilineal formations (implying matrilocal residence, reciprocal cross-cousin marriage, and local exogamy) and provided that the old rules of lineal and local exogamy are retained, there must develop (1) if residence becomes patrilocal, a double descent system of matrimoieties and patrisibs (implying marriage with the daughters of both female cross-cousins), (2) if residence becomes avunculocal, a subsidiary system of matrilines (local avunculines) (implying marriage with the daughters of the matrilateral female cross-cousins only). In both cases the extension of exogamy will be consistent with the old rules functioning under new conditions.

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UNIVERSITY OF MAINZ
MAINZ, GERMANY

TOGGLES AND TOGGLE-WEARING

SCHUYLER CAMMANN

ALL TOO FREQUENTLY we find that some common item of material culture has been so much taken for granted during past centuries that no one has bothered to record it, and now in modern times it is extremely difficult to trace its development because of the lack of information. One such item is the toggle as an object of dress and ornament: more specifically, the belt toggle which was worn on the end of a carrying cord to secure things to a man's belt or girdle.

For many years the writer has been interested in the subject of the Chinese and Japanese belt toggles, called *chui-tzŭ (jway-dze)* and *netsuke*, respectively. He first became actively interested in the netsuke during a visit to Japan, twenty-five years ago, and later he found a few cases of the Chinese variety still being worn in Inner Mongolia and on the Tibetan borders of West China. More recently, he has been engaged in studying and cataloguing the very remarkable collection of Chinese toggles assembled in North China during the late 1920's and early '30's by Miss C. F. Bieber of Santa Fe, New Mexico, which led him into the broader study of the history of toggle-wearing in general, that forms our present subject.

The Japanese netsuke have been popular collector's items in the Occidental world since the Opening of Japan in 1854, when one of the members of Commodore Perry's expedition first took a fancy to some. This popularity led to extensive study both by Westerners and by the Japanese themselves,[1] so we now know practically everything about them—except the circumstances of their introduction to Japan.

When we turn to China, however, the information on the toggles is discouragingly scanty. Here was a custom that had not yet entirely disappeared twenty years ago, and yet it was so little noticed that no one, Chinese or foreigner, had ever bothered to describe it in print; and the numerous examples that reached the Occident to find their way ultimately into museums or private collections were simply catalogued and labeled as "pendants" or as "small carvings" of jade, ivory, wood, etc., as the case might be, with no mention—or professional knowledge—of their former usage. Thus, we had plenty of the objects themselves (still largely unrecognized) but almost nothing about their past history. The writer's attempts

1 The extensive literature on Japanese netsuke includes: Albert Brockhaus, *Netsuke* (Leipzig, 1905, in German); F. M. Jones, *Netsuke* (London, 1928); R. Ueda, *Shumi no Netsuke* (Osaka, 1934, in Japanese); Y. Okada, *Netsuke: a Miniature Art of Japan* (Tokyo, 1953); M. R. Tollner, *Netsuke* (San Francisco, 1954); and F. Meinertzhagen, *The Art of the Netsuke Carver* (London, 1956).

to learn more about the Chinese toggles, and the kinds of belt toggles used elsewhere, has been largely an exercise in frustration. This article is written to present the few facts that have come to light after months and years of searching, in the hope that other students and field workers may become aware of the gaps in our general knowledge of the subject, and perhaps find the means to provide more information.

Belt toggles have been worn over a wide area in the northern parts of the world. Wherever men wore long robes or tunics without pockets—and pockets are a relatively modern innovation—the only convenient way to carry things on one's person was to attach them to the belt or cloth girdle. Such things as knives and awls in their respective sheaths could hang free, while smaller objects could be stowed in belt-pouches or purses. All of these were generally attached to separate cords, and the other end of the cord was then secured to the belt. The securing could be done by tying the end of the cord directly to the belt, or to a ring or frog attached to the belt; or else it could be tied to a large lump, button, or bar, that could be slipped up behind the belt or girdle and be held in place by its breadth, or by its weight as a balance to the pendant object. This last-mentioned attachment was the toggle. A closely related toggle type was the actual belt fastener in the form of a knob or button of ivory, wood, or metal attached to one end of the belt and arranged to slip through a loop at the other end. This type does not seem to have been used in China, Japan, Tibet, or Mongolia, but it was quite common in other areas, as we shall see.

The toggle method of securing things to the belt was particularly convenient, as the wearer could easily attach or disengage the object that it was helping to support, without having to undo his belt every time, or else being obliged to tie and untie small knots, which could be especially annoying in cold weather. The toggle itself had to be large enough, or heavy enough, to prevent the weight of the object itself from pulling it down through the belt, without being so large as to be awkward or uncomfortable for the wearer. And, as it was often his only personal ornament, it was generally made of some interesting or valued substance, and shaped or decorated in some distinctive way to make it more appealing, and to attract the attention of others. These considerations account for the convenient size and the decorative appearance of most of the toggles, which in turn has led to their popularity among modern collectors.

Leather belts with permanent rings or frogs at their sides for securing personal possessions belonged principally to the horse-riding aristocrats of the steppes; although they were also worn by the Mongols who ruled over China, Persia, and Russia in medieval times, and by the Manchu rulers of China, Mongolia, and

Tibet, in more recent centuries.[2] But the less wealthy folk, even among the peoples just mentioned, would generally have worn simple cloth belts or girdles and attached things to them with toggles; and even the nobles and gentry on informal occasions wore silken girdles and used toggles.

Sometimes both methods were employed at the same time. The nobles of Mongolia and Tibet customarily slung their personal possessions from silver-mounted leather frogs that hung from either side of the belt; but they often tied a toggle near the lower end of the long cord which secured the flint-and-steel set, so that the latter could be hitched up tighter to the belt, to prevent its thumping against their legs while they walked or rode horseback.[3]

In trying to trace the origin and development of the toggles themselves, we immediately run into difficulties. Toggle wearing was such a necessary, matter-of-fact trait that writers of the past simply took it for granted, and they did not bother to mention it when describing the habits of their own group or in discussing other neighboring peoples. The evidence provided by art is equally unrewarding for somewhat similar reasons. Unfortunately for our quest, portraiture in the past was largely confined to pictures of the nobles and officials in formal attire, and the old artists left very few detailed pictorial records to show how the masses of the people looked and dressed in their own times. Even when a comparatively ordinary person was included in a painting, such a trivial item as a toggle would have been omitted by an Oriental artist as a non-essential, and hence distracting, element. Lastly, the location of the toggles, at the side of the belt, always made it difficult to see them, as the sides of the body were generally concealed by hanging arms or drooping sleeves.

Even archaeology has been of little help. Unless a toggle was by chance found in place on a body entombed in the colder regions of the Far North, it would ordinarily be lost in the general accumulation of miscellaneous small objects and personal ornaments found in ancient graves; and it would be still more difficult to recognize one if it were found alone in a city site or elsewhere, as they are so easily mistaken for small amulets, or other ornaments.[4]

2 The Manchu belts with side-fittings are illustrated in the Official Regulations of the Ch'ing Dynasty, *Ta Ch'ing Hui-tien-t'u* (Kuang-hsü edition, Peking, 1899), chs. 57-75. A similar style of belt from Tibet, and a frog for another, are illustrated in W. W. Rockhill, *Notes on the Ethnology of Tibet* (reprinted from *Report of the United States National Museum for 1893*, Washington, 1895), plates 10 and 11.

3 For an auxiliary toggle on a belt with side-fittings, see Rockhill, *Notes*, plate 10.

4 Many of the so-called "Ordos bronzes" from the Ordos and Gobi Desert regions look as though they might have been toggles, but as yet it has been impossible to prove it. For examples, see Paul Pelliott, *Sceaux-amulettes de bronze avec croix et colombes, provenant de la boucle du Fleuve Jaune* (Revue des Arts Asiatiques, vol. 7, no. 1, 1931), pp. 1-3 and accompanying plates.

In view of this disappointing lack of old evidence, whether literary, artistic, or archaeological, it would seem to be easier to work back from the known examples of more recent periods. Certainly the best known of the more modern belt toggles are the netsuke of Japan, as we have already mentioned. Netsuke were regularly worn as a customary part of the costume of most Japanese men until well past the middle of the nineteenth century. They persisted there even after the abolition of feudalism, in 1868, brought about a radical change of styles, lasting until the introduction of cigarettes drove out the use of pipes and tobacco boxes which they had helped to secure to the men's *obi* girdles. In spite of considerable variation in styles, subjects, and materials found in the Japanese netsuke, we now know that these belt toggles came into Japanese culture rather late. They seem to have been introduced into Japan about the end of the sixteenth century of our era, during the latter part of the Ming Dynasty in China, probably following the Japanese attempts to conquer Korea in the 1590's. The introduction of tobacco from the New World by the Portuguese, about the same time, apparently had great influence in helping to spread the custom. By the mid-1600's the netsuke were widely used for supporting tobacco boxes or smoking sets. Their great popularity during the Tokugawa period (1603-1867), when over-strict sumptuary laws decreed that they were the only form of personal ornament permitted to those below the rank of samurai, and the rapid changes in popular taste during those two and a half centuries could easily account for the multiplicity of types that we now find.

It seems probable that the custom of wearing toggles must have reached Japan from China,[5] although it may have been brought indirectly by way of Korea.[6] A Chinese form of seal, pierced for a cord so that it could double as a toggle, seems to have been the earliest type of netsuke, and these and others of the early netsuke forms were called *karamono,* "Chinese things," while the early figure netsuke were called *tōbori,* meaning "Chinese carvings."[7] Few of the latter have survived, but

Though these are often called "Nestorian" their supposed Christian symbolism has never been proved either. The cross with equal arms is a very old symbol in Asia, and the so-called "doves," found among them, look more like eagles. For examples of non-Christian, Central Asian bird symbols, see S. Cammann, *Ancient Symbols in Modern Afghanistan* (Ars Orientalis, vol. 2, 1957, pp. 5-34).

5 See Hazel H. Gorham, *Netsuke, their Origin and Development* (Cultural Nippon, vol. 6, no. 3, November 1938), p. 86.

6 Korea in the 1590's was still a cultural and semi-political dependency of Ming China, and the Koreans wore a modified Chinese costume which probably included toggles. They have also worn toggles down into modern times. On the other hand, Japanese visitors to China or Chinese traders in Japan could have brought toggles to Japan directly. The exact means of introduction was apparently never recorded.

7 See Jones, *Netsuke,* p. 19.

from sketches of them in old Japanese books, we can see that they included a variety of objects in purely Chinese style.[8]

The origins of toggle-wearing in China itself are very obscure, but considering the long span of Chinese history they seem to have arrived rather late. They may have been used much earlier in Tibet and Mongolia, where we know from personal observation that they were still being worn in modern times, and it seems quite likely that they came into China along with other foreign influences during the Yüan or Mongol Dynasty (1280-1368), if not before. At any rate, by the time the Japanese borrowed the custom from the continent at the end of the sixteenth century, the custom must already have been well developed in China, because we have seen examples that must date from the Ming Dynasty (1368-1644) which already indicate a broad development.

The Palace Museum Collection of Old Peking (now on the island of Formosa) used to have a long horizontal scroll depicting a Ming emperor of the early fifteenth century, riding horseback with some of his courtiers, and in this painting one of the attendants seems to be handling or adjusting a toggle that secures his purse.[9] Other bags and purses worn by his companions distinctly show a bead halfway down the double carrying cord, which must have been the ancestor of the Japanese *ojime* bead that was regularly worn with the netsuke. This picture is rare in that most of the surviving Ming paintings represent nobles and officials in more formal dress, with grotesque-looking hoop belts that projected outward from the body, and hence did not permit the use of toggles; while in the other hunting or riding scenes of that period the very full Ming sleeves, or the loosely cut robes then in fashion, overlap or otherwise conceal the sides of the belt, making it impossible to see just how things were fastened to it.

From the succeeding dynasty of the Ch'ing (1644-1911), there is a painting in the same Palace Museum Collection which shows the Chia-ch'ing emperor (r. 1796-1820) sitting informally in a garden with several attendants. His pages are depicted with objects hanging from various parts of their belts, which must have required the use of toggles, although again the toggles themselves are not

8 Brockhaus illustrated some carvings purporting to be *tōbori*, in his *Netsuke*, pp. 93-98, figs. 103-134, having taken them from Inaba Michitatsu's *Sōken Kishō* (Kyoto, 1781) vol. 7, pp. 15-17b. Actually, these represent a strange mixture of small carvings from many lands, including a few truly Chinese human figures (figs. 108, 111, 121, 131 and 132), an Indonesian *kris* handle (fig. 104), and a "knight" from a Siamese chess set (fig. 109). These can give some idea of the diverse influences which must have combined to influence the early Japanese netsuke carvers; but still more it shows the confusion regarding foreign things in the mind of an 18th century connoisseur in self-isolated Japan.

9 Illustrated in the Palace Museum Monthly, *Ku-kung Chou-k'an*, no. 269, Aug. 5, 1933, p. 2.

revealed.[10] Such informal paintings are also relatively rare from the Ch'ing Dynasty, and in the others, too, the belts are usually concealed by hanging sleeves or overlapping upper robes.[11]

If the old Chinese paintings have been rather unsatisfactory for illustrating the early use of toggles, they do show something that seems to bear on our subject. Many of the Sung (pre-Yüan) paintings of old men and sages depict them wearing, tied to their cloth belts, small gourds or bits of sacred fungus *(ling chih)*.[12] Large bottle-gourds were commonly used by pilgrims and other travellers in mediaeval Asia for canteens to hold water or wine, but the kind worn at the belt in these pictures was too small to serve as anything but little medicine bottles, or as amulets to promote fertility (because of the symbolism of their many seeds). Similarly, the fungus could not have been used for anything except medicine for longevity, or for an amulet with similar associations. In the primitive medical concepts of Old China, charm amulets were considered to be as effective in their own as were the actual medicinal potions.

These earlier ideas were also carried on in the toggles themselves after their introduction to China. For, when we study the materials used to make them and the kinds of symbols portrayed on them, we can see that beliefs regarding supposed curative properties and auspicious wishes for health, longevity, and fertility were nearly always present.[13] It would seem, then, that this idea of carrying medicinal substances or charm amulets at the girdle in older times had constituted a second line of ancestry for the Chinese belt toggles. Almost undoubtedly the latter were developed from a fusion of two basic ideas: first, the requirement of a handy fastener for securing things to the belt, and secondly, a portable bit of medicine or a charm for personal luck and protection against bad spirits or the diseases which they might bring.

These linked concepts apparently passed over to Japan in close relationship, but the Japanese seem to have misunderstood them, or at least they handled them somewhat differently. They generally used the netsuke as a toggle to support a

10 *Idem*, no. 334, March 21, 1934, p. 4.

11 Some particularly exasperating Ch'ing paintings, of the mid-18th century, also in the Palace Museum Collection, show farmers wearing pouches or purses hanging by cords that must have been attached to toggles because of their location; but again the outer jackets hide the latter, preventing one from seeing the actual mode of attachment (see *idem*, nos. 252, 256, 257, 1265, 1933).

12 For an example, see Laurence Binyon, *Painting in the Far East* (London, 1908), plate 12.

13 The writer has recently written another article (to appear in the Journal of American Folklore) on the symbolic and medicinal reasons behind the choice of certain woods for the making of Chinese toggles.

small medicine box called *inrō* which carried one or more kinds of herbs or drugs in separate compartments.[14] Since the Japanese toggles were no longer drugs or charms in themselves, they could be made of any convenient substance, and their decoration ceased to be symbolic, but became purely ornamental in the Japanese artistic tradition. Eventually, when the netsuke were used to secure many other things in addition to the inrō, such as purses, pen-cases, pipes, etc., the close connection between netsuke and inrō was never entirely forgotten, and they were usually mentioned in the same phrase.

One reason for the scantiness of Chinese records regarding toggles, either pictorial or written, is that toggle-wearing was, during the Ch'ing Dynasty at least, essentially a trait of the middle and lower classes, or of the "barbarians" from beyond the frontiers—in which category most of the Chinese placed their Manchu overlords—while toggle-making was primarily a folk art in China. In fact, it would seem that men often carved them for themselves when house-bound in winter, or else they made them for gifts, such as wedding presents, for their friends. Apparently, hunters or farmers, herdsmen, and shepherds, whittled out toggles of wood or bone, horn or antler, in their spare time; while the woodworkers and stonecutters of the towns and cities created them from leftover scraps of fine woods or less expensive bits of semi-precious stones, discarded because of bad coloring or flaws, often working them on the lathe.

Even in the case of Chinese toggles in jade or ivory, which must have been made for wealthier patrons by skilled artisans, there never seems to have been any established industry for producing them even remotely comparable to the netsuke industry that flourished in Japan during the late eighteenth and early nineteenth centuries. If there were any outstanding toggle artists in China—and certain groups of toggles in semi-precious substances, made in the same general style, indicate that there may have been a few of them—their works were not signed as the fine Japanese netsuke were, so they remain anonymous.[15] Therefore it is

14 While many refinements of the *inrō* boxes were due to later development in Japan, again the origin was apparently in Old China. The Chicago Museum of Natural History has in its Jade Hall a small Sung Dynasty box in the form and shape of the much later *inrō*, but with only a single compartment, also intended to hang from the girdle (no. 183488). Furthermore, the Tibetan collection in the same museum has a number of small wooden boxes, made on the same principle, from eastern Tibet. When a similar culture trait appears in both Japan and Tibet, experience tells that it can almost always be traced to a Chinese origin, even though it may have died out in China, leaving no traces there.

15 The only marks on Chinese toggles are the marks of the silversmiths on some of the metal caps or other fittings, or on the all-metal ones; even these are usually only commercial trademarks and not actual names.

impossible to date the Chinese toggles with any certainty, and that also means that we are unable to trace any clear chronological development of types and styles as one can with the Japanese netsuke.

A few clues for dating might be gained from the subjects depicted. For example, we know from other arts that certain animals or plants, like the bat symbolizing happiness, or the artemisia leaf, would be popular at one period only to fall from favor at a later time. Also, special conventions for representing certain animals or birds might come into style for a time, later to be abandoned.[16] For Chinese tradition was certainly not static, even though conservatism in the remoter provinces, farther from the capital, might cause old traits to linger on there as survivals long after they had dropped out elsewhere. Then, too, the age of a toggle is sometimes partially apparent from the degree of wear and the discoloration of its material, but this too can be misleading, especially when old ivory or ancient mammoth tusk has been reworked at a later time.

Most hazardous is the attempt to determine dating by "style" alone. Stark simplicity or even downright crudity on a Chinese toggle may merely be the result of an amateur or primitive carver. Certainly it cannot be taken as a sign of great age. Similarly, an elaborately conceived or very finished toggle is not necessarily the product of a "mature art" from a later period; it might well have been made at the same time as some of the cruder ones, but for a wealthier man who could afford to hire a trained craftsman to produce it for him. All the sophisticated jargon of the date-minded art historian might as well be cast aside; for in most cases we simply cannot tell how old a given Chinese toggle is. Instead we must try to appreciate each one for itself as an expression of a now-forgotten folk art, reflecting in the choice of material and its symbolic decoration the hopes and aspirations of the common people of Old China.

It would be equally rash to consider the Chinese toggles as "antiquities." Even though a few of the surviving examples might be dated with some confidence as "Ming," several hundred years old, we usually cannot tell. Some of them were still in use in the 1930's and early '40's. Miss Bieber and her friends used to see them being worn occasionally by coolies and other men in and around Peking, and I found them being worn by caravan men and muleteers in far western China, by the Tibetans in the borderlands of northern Yünnan and western Szechuan, and by the Mongols of Inner Mongolia, as previously mentioned. In fact, we have both purchased some of the examples now in Miss Bieber's collec-

16 For the changing fashions in Chinese symbols, see S. Cammann, "Types of Symbols in Chinese Art" (in *Studies in Chinese Thought*, Arthur F. Wright, ed., Memoir no. 75, American Anthropological Association, Chicago, 1953, pp. 195-231).

tion directly from their wearers. But now, in China proper as in Japan, the custom is apparently completely dead.

Even the former distribution of toggle-wearing within Old China itself is still something of a mystery. Although we have actually seen them being worn in northern and western China within this century, we have not observed toggles being worn in South and Central China, in spite of very extensive travels throughout those areas. Furthermore, the relative scarcity or total absence of such common or familiar South China substances as water-buffalo horn or bamboo would suggest that toggles were not commonly made there, at least in recent times. One might partly account for this by pointing out that the specimens in the collections we have been studying were mostly acquired in north China; but in the absence of any positive evidence to the contrary, it seems fairly certain that toggle-wearing was primarily, if not exclusively, a northern trait in China. This leads us to believe that it must have been introduced from the north or northwest by another people, such as the Mongols of the Yüan or the Uighur Turks.

When European anthropologists came to study the customs of the Chukchee and other native peoples of northeastern Siberia at the end of the nineteenth century, they found them wearing belt toggles, and formerly the trait was apparently widespread throughout Siberia, indicating a strong northern development that could have influenced China. The Chukchee belt toggles, as illustrated in the writings of the explorers of that period, seem to have been largely of the button type, made of walrus ivory, with a loop at the back for the cord.[17] However, certain of their old amulets preserved on rawhide strings, in the form of little men, animals, and utensils, look very much like old toggles of more varied inspiration, perhaps retained for their spiritual effect because they still were thought to possess some of the powers of the deceased ancestors who had worn them—but this is mere conjecture.[18]

The custom of making toggles from walrus ivory was also found among the Alaskan Eskimo, who fashioned them in the shape of whales, polar bears, and seals, in addition to making larger, usually plainer, toggles for harpoon lines, dog-sled harness, and other gear. However, they seem to have worn them primarily as belt fasteners, rather than to secure things to the belt, like those from East Asia.[19] It is also noteworthy that a considerable number of toggle-like objects,

17 Illustrated in W. Bogoras, *The Chukchee* (Memoirs, American Museum of Natural History, vol. 12, part 1, Leiden, 1904), p. 259, figs. e and f.

18 *Idem*, p. 224, fig. 155.

19 See E. W. Nelson, *The Eskimo about Bering Strait* (18th Annual Report, Bureau of American Ethnology, part 1, 1896-97), plate 27, and pp. 61-62.

still unexplained, have been found in pre-Eskimo sites in the northern parts of Alaska and Canada, suggesting that the predecessors of the Eskimo probably had belt toggles of the securing type also.[20]

Presumably the Eskimo or their forerunners also introduced the idea of toggles to the Indians of Eastern Canada—unless their own remote ancestors had themselves brought the trait from Northern Asia—and the Indians, in turn, passed it on to the French-Canadian woodsmen. The writer's grandfather used to show him a wooden cup or "noggin," made from a pinetree burl, which he had brought back from a fishing trip in northeastern Canada at the end of the nineteenth century, that was furnished with a short thong for suspension, ending in a plain wooden toggle of cylindrical shape carved from some harder wood. This, he told me, was a familiar way by which the voyageurs then carried cups and knives, etc., attached to their woven cloth belts.

From Siberia the trait of toggle-wearing also seems to have extended westward into Europe. In Hungary a type of belt toggle formed part of the national costume for men until the beginning of the twentieth century, and may have lasted still later in remote areas. This was an ornamental piece of steel with a dual function. It not only anchored to the man's belt a cord from which hung his flint and tinder bag, and his pipe and tobacco pouch, but it also served as a striker for the flint, in making fires and lighting his pipe. These Hungarian metal toggles finally passed out of use; partly because of the disappearance of the national dress under the influence of drabber styles from western Europe, and partly because the introduction of matches made the flint-and-steel unnecessary.

The Old Hungarian peasants also produced another kind of toggle, which—although it was used in a very different way—had an even greater resemblance to the Chinese belt toggles. These were "sheep toggles," small pieces of wood carved in matching pairs and used like the belt-fastening toggles to secure rope collars around the necks of a ewe and her lamb, respectively, so that the two could be easily recognized and reunited if they became separated.[21] To this end, each set of two (the ewe's being slightly larger) was distinctively made with a different pattern. The shepherds used to whittle these out of scrap pieces of wood in their spare time, representing in simple fashion familiar objects of daily life or of common domestic use, much like the Chinese "replica toggles." Among the Hun-

20 See comment by Arthur Diósy in *Transactions and Proceedings of the Japan Society, London, 1894-95*, vol. 3, part 4, 1897, p. 19.

21 See Malanyay Dezsö, *A Magyar Nép Müvészete* (Budapest, 1911), vol. 3, figs. 316-317 (facing p. 244); and M. Bing, *The Crafts of the Puszta Herdsmen* (Ciba Review, no. 45, March, 1943), p. 1642, and picture on p. 1644, top.

garian "sheep toggles" are found miniature flutes, axes, sickles and spades, boots and bootjacks, chairs, wine kegs and beer steins, milk pails and yokes for carrying same, fiddles and ladders, padlocks and keys, and many other domestic items. Particularly striking are the winnowing fans, because exactly the same subject often recurs among the Chinese belt toggles. However, like the wooden toggles of Old China, also carved by peasants, no two of these Hungarian "sheep toggles" are ever quite the same, because each one was separately fashioned by an amateur carver. Like the Chinese toggles, they were true examples of a folk art, and not the products of any regular industry.

Forms of toggles are also found in two other areas of the Old World, which are neither anywhere near the areas previously discussed nor contiguous to each other, and they are probably the results of independent development to meet local needs; just as the Hungarian sheep toggles appear to have been a new adaptation of an old custom to meet a specific need.

The first of these areas is West Africa, where belt toggles were until recently used in the form of large buttons of some hard substance, presumably wood, covered with neatly plaited leather. The sheaths of knives and swords were provided with loops at both sides, into which were slipped buttons that formed the terminations of a woven belt or slip strap. The University Museum in Philadelphia has several examples of these from the Mandingo tribe, and from the same people it also has a heavy whip with a double lash, said to be a slave whip, which has a stout thong at the end of its handle, ending in a huge button covered with leather thongs woven to form a delicate pattern in two colors. Obviously the button was intended to secure the whip in somebody's belt.[22]

The second area is Northern Borneo. The costumes of the more southerly parts of Asia were usually not conducive to toggle-wearing. For example, we do not find belt toggles in the Near East or in the Indian subcontinent, because people there ordinarily wore free-flowing robes without belts or girdles, in order to permit easy circulation of air in a very hot climate. Similarly, in Southeast Asia, the heat led most people to adopt a sarong-type costume which did not require belts. Only in Borneo do we find a curious form of toggle used in connection with the headhunters' sword belt, made of wood, antler, or "hornbill ivory" *(Anggang gading)*. This Borneo toggle is usually said to be primarily a belt fastener, but again the University Museum has an example which could only be a toggle for securing a sword, rather than fastening the belt which supported the sword. This was acquired from the Madang people along the Klinjan River, in 1897, by the

22 University Museum, no. AF 43-21.

Harrison-Hiller Expedition.[23] This last example is fairly crude, being simply a disc cut from the base of an antler, pierced with two holes for the beaded cord, but some of the other carved toggles from Borneo are intricate works of art, especially those in hornbill ivory, of which the University Museum also possesses a fine example.[24]

Summing up the evidence as it is now known, it would seem that there was one large area, including Northern Asia and Eastern Europe, within which toggle-wearing could have spread by diffusion, and two distinct outer areas where it would seem to have been an independent trait. Within the first area, it would seem that the use of toggles had probably originated in the northern forest regions of middle Asia, which is a midpoint in the area of their known distribution, and that it spread outward from there. If so, perhaps the earliest toggles were sections of twigs or gnarled rootlets, as some of the more primitive Chinese examples still are. The Japanese word *netsuke* originally meant "root fastening," possibly preserving an earlier Chinese or Korean term which reflected a tradition of its ultimate origin. Wood could still be used in China, but as the use of toggles was carried southeast into the steppe country where strong and durable hardwood is rare, the material had to be changed; thus we find the steel toggles in the plains district of eastern Hungary. Then, in passing to the north, the absence of both wood and metal compelled the use of either bone or ivory, as found in the Chukchee and Eskimo toggles.

The Chinese went on to develop a great variety of other substances, so that we find in China almost as many variations in the materials used for the toggles as there were in their shapes or in the subjects depicted on them.[25] This would seem to indicate that China not only had far greater resources than other lands in Northern Asia, and a more developed ingenuity in using them, but also that there must have been a considerable passage of time in which to accomplish this development, during which constant experimentation achieved a vast number of possibilities. There is also great deal of variety in the Japanese netsuke, but this is known to have been the result of a forced development under social pressures for novelty, and this factor was absent from the development of the toggle in China as far as we now know.

23 University Museum, no. P 1258.

24 See S. Cammann, *The Story of Hornbill Ivory* (University Museum Bulletin, vol. 15, no. 4, Philadelphia, Dec. 1950), fig. 13, center, for a picture of this.

25 The writer has recently completed a book on the subject of the Chinese toggles, with detailed studies of variant forms, substances used in making them, and of the subjects depicted, with analysis of their auspicious or symbolic meanings, based primarily on the Bieber Collection but referring also to other examples, found elsewhere.

Admittedly the story of the belt toggle is still incomplete, and we look forward to further contributions by others, which we hope will not only determine more specifically the full range of the toggle-wearing trait in times past, but also investigate more thoroughly the nature and extent of the little-known regional developments, especially in Hungary, West Africa, and in the still unknown areas of northern Central Asia.

University of Pennsylvania
Philadelphia, Pennsylvania

THE MICRO-DEMOGRAPHY OF MARRIAGES IN A NORTH INDIAN AREA

HAROLD A. GOULD

I

AMONG the great number of writings that have appeared in recent years concerning the social life of rural India, two have been especially emphatic in pointing out that a system of caste relationships is possible only as long as certain social conditions are satisfied. Eric Miller has said:

> . . . a necessary correlate of a rigid caste system is a system of territorial segmentation which has two functions: it promotes localized interdependent relations between castes, especially at the village level, by limiting the spatial range of intercaste relations for all castes; and it supports the hierarchical order of castes by permitting greater mobility and a greater spatial range of intercaste relations for those at the top of the scale than for those at the bottom.[1]

In a paper comparing caste structures in East Africa, on the one hand, and in rural and urban India, on the other, David Pocock notes, after Bouglé, that caste in its traditional form must be recognized as a system and (paraphrasing Bouglé) that "any truly sociological definition must take account of three elements: hierarchical organization, hereditary specialization, and reciprocal repulsion."[2] Finally, with reference to the hierarchical element in the caste system, he says:

> For a hierarchy to exist two conditions are necessary: first there must be a group of locally defined castes in ritual and economic relations with each other, and secondly there must be a local Brahman caste to act as the model and the gage of ritual conduct.[3]

Thus, both authors conclude, each in his own way, that a true *system* of caste relationships is possible only in a localized area because only there can the elements appropriate to its operation exist. These elements include hierarchy and functional interrelationship, they say. Additionally, says Pocock (and Bouglé), there is "reciprocal repulsion" (although Pocock would not mean by this phrase precisely the same thing as Bouglé but rather a quality better expressed by the word "difference"). Their notions add up to the view that a caste system is a complex of ritually and occupationally specialized groups who are arranged in a hierarchy and who must of necessity exist in a localized territory where their interdependence (a corollary of specialization) can be effectuated and where their "morally in-

1 Miller, 1954, p. 410.
2 Pocock, 1957, p. 290.
3 *Ibid.*

trinsic"[4] gradations can be expressed as differential approximations of the ritual conduct of the local Brahman group.

A question that naturally arises then is what are the natural boundaries of a system of caste relationships. In this regard, Miller makes another useful observation based upon his field work in a region of Malabar:

> The internal organization of castes was localized. . . . For all castes the internal administrative group and the in-marrying group broadly coincided.[5]

We know already, from the passage of Miller's quoted earlier, that the dimensions of the administrative group were not uniform over the entire community. On the contrary: "The larger and more inclusive the territorial unit in which the members of a caste can move, the higher the rank of the caste."

Therefore, if Miller is correct, a study of the spatial distribution of marriages is capable of providing insights into both the territorial dimensions of a caste system and some aspects and implications of the hierarchical order, and resultant differential mobility, implicit in such a system.

II

The data for a study of this kind are the marriages which have been undertaken by the people of "Sherupur"—pseudonym for a village in the Faizabad District of Uttar Pradesh (Province) in northern India.[6] The village contains about 130 families (of which 115 are included in this study)[7] distributed among

4 Caste is a form of social stratification which, like all systems of social straticfication, is a product of complex civilization where occupational specialization is at an advanced stage and the multiplicity of occupational roles and human population necessitates some form of "layering" process in which clusters of occupational roles of approximately the same reward-value are set off from other clusters in a hierarchical fashion. Caste is a form of social stratification in which occupational roles and the persons occupying them are regarded as one; where, consequently, mobility is dramatically curtailed; and where the difference between the strata is thought to reflect the moral condition of its members, a condition which is thought to inhere in the nature of the occupations they perform and to which they are joined inseparably. In this sense, then, it can be said that specialized groups in a caste society are "morally intrinsic."

5 Miller, 1954, p. 416.

6 Work in this village has been made possible by two different sources on two separate occasions. In 1954-55, "Sherupur" was studied with the help of a student grant from the Fulbright Foundation; in the present, work is being made possible by a Post-Doctoral Fellowship from the National Science Foundation. I am also indebted for helpful suggestions concerning this article received from the late Professor D. N. Majumdar, Dr T. N. Madan, and Mr Sudama Prasad Mamgain.

7 In one hamlet the author encountered between ten and fifteen Ahir families who were unwilling to answer questions out of fear that their responses would somehow be employed to their detriment by "the Government."

a main settlement, from which the village takes its name, and four outlying hamlets *(purwah)*. Among the 115 families successfully interviewed there turned out to be 345 pairs (129 married daughters and 216 married sons).

Two approaches to ascertaining the location of each "affinal village" were employed. Firstly, the *pargana*[8] in which any village named was situated was learned so that its general locale vis a vis Sherupur would be known. Secondly, each village named was searched for on a large-scale district map in an effort to pinpoint its precise location. As might be expected, whereas it was possible to identify the *pargana* of all 345 "affinal villages," only 189 map identifications were successfully made.[9] The latter figure, however, proved quite adequate, in combination with knowledge of the general location of all villages, to provide a clear picture of the spatial patterning of marriage.

Mention must be made of the geographical categories used. Uttar Pradesh is the most populous province in India[10] with a population in 1951 of about 64 million people; its area is comparable to that of the state of Arizona (about 113,000 sq mi). Faizabad District is situated in the eastern half of Uttar Pradesh; its population is about 1.5 million and its area 1,740 square miles. Sherupur is in turn to be found in the western portion of the District, almost in the center of the *pargana* called Haveli-Oudh. All told there are ten *parganas* in District Faizabad. As the discussion proceeds, a distinction will be made between the five western *parganas* which comprise Sherupur's local area and the five eastern *parganas* of the District which (as will be presently seen) must be regarded as beyond it. The former, henceforth to be referred to as Western Faizabad, is shown in the map (Fig. 1).

III

Before coming to the actual results obtained by geographically locating marital ties and analyzing the observed distributions, some comments must be made on certain aspects of the social organization of the region. Unlike south India, north Indian villages maintain strict rules of "village exogamy." This condition appears to arise from three highly interrelated factors: (1) caste endogamy, (2) territorial stabilization of kin groups, and (3) *gotra* exogamy.

8 The smallest and basic unit of territorial organization in rural India. The unit has great antiquity in the country but its modern characteristics probably date back to agrarian organizational reforms instituted by the Afghani ruler Sher Shah in the middle of the 16th century.

9 Problems of imperfect map revisions over the years, changes in village names, regional and communal differences in names, the often unclear differentiation of village (*gaon*) names from hamlet (*purwah*) names are some of the reasons for this order of discrepancy.

10 At the time of the author's field trip it was so; it will be so again after the impending new partition of Bombay State. For a few years in between, Bombay State held this distinction.

(1) *Caste endogamy:* The fact that each functionally differentiated group must for ritual, or "morally intrinsic," reasons avoid commensal and connubial relations with all others,[11] coupled with the added fact that in the north the number of caste groups involved in a local system of caste relationships tends to be quite large, means the imposition of a severe limit upon potential objects of matrimony (and all other forms of "equalitarian" relations) within a village or its immediately contiguous area. This is especially true where the population has been fairly stable in its composition for a long while.

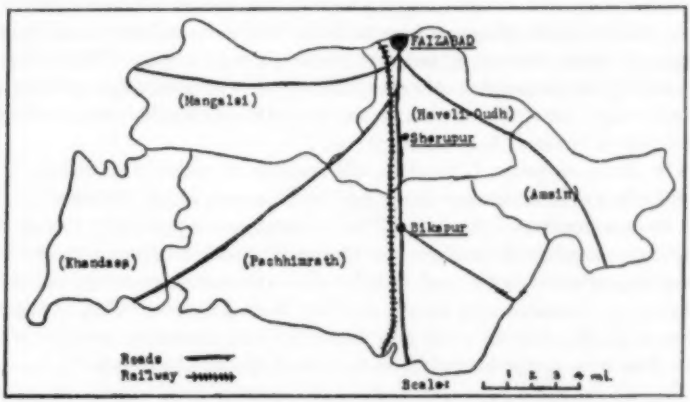

FIG. 1. Western Faizabad District.

(2) *Territorial stabilization of kin groups:* Agricultural land and hereditary occupations are the chief forms of "property" in these villages. Families of cultivators provide a share of their surplus to hereditary specialists who have become permanently attached to the formers' households. This relationship (called the *jajman-purjan* relationship[12]) is fundamental in a traditional Hindu village community because the "morally intrinsic" nature of occupational stratification makes ceremonial purity for some groups conditional upon the absorption of the impurity inherent in many occupational activities (in a general way, those associated with "blood, death, and dirt"[13]) by other groups.[14]

11 This is a general statement which ignores for existing purposes certain specified ways in which both commensal and connubial interactions do occur.

12 Cf. Wiser, 1936; Opler and Singh, 1948.

13 Cf. Passin, 1955.

14 Gould, 1959.

The fact that property tends to be in such inelastic forms and is hedged in by the elaborate tabus of Hinduism firmly cements families to their community and local region. A further adhesive is the ancestor-worship focus of the family which makes the ancestral seat a shrine before which survivors of the deceased members are expected to worship in order to maintain the supernatural continuity of the kin group. Finally there is the already noted territorial segmentation which is intrinsic to a true system of caste relationships. Locally stabilized social structures are the essential ingredients of such a system.

As a consequence of the foregoing factors, members of the same caste in a village, and in nearby villages, are normally confined to a small number of descent groups; sometimes they are all members of a single descent group. Thus, villagers have an implicit notion that all castemen living nearby, even when genealogical records (where kept) do not show it, are *rishtedar* ("related"); and to marry a person who is "related" is to commit incest.

(3) *Gotra exogamy:* Ultimately, the criterion of *rishta* ("relatedness") in north India is to be understood in the light of the association of orthodox behavior with the maintenance of the *gotra*. The Brahmans, as suggested by Pocock and Bouglé, are the gauge of ritual conduct. Degree of orthodoxy means degree to which a caste approximates in the total complex of its ceremonial, economic, and social structure the characteristics of the resident Brahman caste. When low castes endeavor to rise, they do so by adopting social and ceremonial practices which make them more acceptable ritually in the eyes of the local Brahmans.[15]

One of the most important symbols of Brahman ritual superiority is their *gotra* organization. *Gotras* are agnatic kin groups, and all Brahman *gotras* are supposed to be ultimately traceable to one of the great *Rishis*, or founders of schools of ritual.[16] Thus, they are in their ultimate conception sacrificial structures whose proper maintenance is an implicit condition of the maintenance of ritual purity itself.

The higher the status of a caste, the more its kinship organization will correspond to the Brahman *gotra* pattern. Historically, one method by which Brahmans have sought to maintain their position of ritual dominance has been through the conferring of genealogical-ritual legitimation upon incumbent conquerors—i.e. by giving to the latters' lineages or clans the status of *gotras* through demonstrating their ultimate derivation from the *Rishis*. Rajputs are a typical illustration of

15 This is true of any low group which continues to identify with the values of the rural Indian social order. Improved status for these types of "depressed" groups means not emancipation from the caste system but simply a higher position within it.

16 Karandikar, 1929.

this phenomenon. In Sherupur, they are the dominant caste politically and economically, and complement the ritual authority of the Brahmans. They maintain exogamous clans which they call *gotras* and strongly connect genealogical refinement with maintaining their ritual status.

The social significance of the *gotra* is, then, that "village exogamy" is virtually automatic for any "clean" caste, because in the average-sized Indian rural community all members of such a caste residing there, and most probably in adjoining communities as well, are of the same *gotra* and, therefore, are *rishtedar*. The outright practice of "village exogamy" by the lower status and genealogically less refined castes on the ground that their fellow resident castemen are *rishtedar* seems to be a result of combining the aforementioned consequences of caste endogamy and territorial stabilization of kin groups with a tendency to try to imitate the Brahman *gotra* system by adhering to its minimal exogamic spatial implications.

IV

The over-all localized nature of caste can be seen readily in the fact that despite "village exogamy" the average distance of a marriage from Sherupur was only 10.5 miles.[17] The distribution of the 345 marriages recorded further illustrates this local characteristic, for 93 percent of them were within Western Faizabad. Furthermore, for the village as a whole, it would appear that "local" clearly implies intra-district marriages (with exceptions to be noted presently), even to the extent of over-riding purely distance criteria, because the pattern of marital ties spreads much farther in its southerly than in its northerly arc—a condition which corresponds with the fact that Sherupur is less than ten miles from Faizabad's northern border but more than twenty miles from its southern border. Dense marital distributions halt abruptly at both boundaries. This finding wholly agrees with Miller's study, and would seem to say that a district represents in the villagers' minds something more than a mere geographical abstraction.

At the same time, and as might be anticipated, Sherupur's home *pargana* shows the greatest concentration of "affinal villages" (66%), while its southerly neighbor, Pachhimrath, contains the next most abundant concentration (23%). Amsin and Khandasa, situated respectively on the eastern border of Haveli-Oudh and the western border of Pachhimrath, account for the remaining five percent of marriages within Western Faizabad. At the same time, no family in Sherupur had ever married into the due-easterly bordering *pargana* of Mangalsi. One suggested explanation is the distribution of roads which in turn affect the relative accessibility

17 Figures concerning distances are based upon the 189 cases in which actual map identifications of "affinal villages" were made.

of various parts of the District. A main traffic artery runs due north and south and within less than half a mile of Sherupur; it originates in Faizabad city (the District capitol, 5 miles to the north) and terminates in Allahabad (90 miles south), giving off branches to the southeast and southwest as it passes through the District. There is no such ready communication available in the direction of Mangalsi. A further explanation may be that once a village's intermarrying commences in a given direction (for whatever the initial reasons), it tends to maintain that direction because affinal ties that get established become a source of information concerning further marital opportunities. A clearer understanding of what specifically leads to the particular spatial proportions of a territorial segment within which a system of caste relationships comes to function would be helpful in this matter.

It has also been stated by Miller that hierarchy is expressed in the range of spatial mobility differentially possible to castes of varying status. There is, he says, "a greater spatial range of intercaste relations for those at the top of the scale than for those at the bottom." Then he asserts:

> Only the military Nayars and higher castes . . . had any internal organization that extended to the boundaries of the *nad* [a territorial division] and beyond. For all others the caste or subcaste was merely a local grouping.[18]

Theoretically, then, since it has been claimed that the "internal administrative group" and the "in-marrying group" tend to coincide, there should be a significantly different range of marital distributions for the high castes than for the low. In Sherupur, this is precisely the situation as the figures presented in Table 1 reveal.

Thirteen castes reside in Sherupur (titles, functions, and proportions are given in Table 2) who can be subdivided into three general groupings on the basis of their functions and their socio-economic condition. Grouping I consists of the Brahmans and Rajputs who are both ritually the "cleanest" castes and the principal proprietors of agricultural land in Sherupur. Grouping II embraces the three castes (Murau, Kurmi, and Ahir) who practice agriculture directly on a combination of owned and rented land and who represent a middle level of economic well-being. These castes are "moderately clean" from a ritual standpoint—the Ahir and Kurmi constituting the lowest stratum of the Twice Born (Vaisya) and the Murau, technically Sudra, representing an instance of a caste whose "clean" occupation and modest prosperity are impelling them to seek recognition of their claim to Twice Born status. Grouping III is made up of the landless artisan and

18 Miller, 1954, pp. 410, 416.

laborer castes (Sonar, Lohar, Kori, Chamar, Gadariya, Teli, Nai, and Muslim) who are ritually at the bottom of the caste hierarchy (Sudra) and economically depressed as well (with the exception of the one Sonar family which is modestly prosperous).

Clearly, to return to the main point, the upper grouping (I) of Brahmans and Thakurs is completely distinct from the others in the matter of marriage distributions. Whereas for the latter the norm is for the overwhelming majority (more than 98%) of their marital ties to have been established within Western Faizabad,

TABLE 1

Distribution of marriages by various areas adjoining Sherupur, by caste grouping

Grouping		*Haveli-Oudh*	*Pachhimrath*	*Amsin-Khandasa*	*Outside W. Faiz.*	*Total Marriages*
I	No.	3	4	2	17	26
	%	.12	.15	.08	.65	1.00
II	No.	167	52	10	4	233
	%	.72	.22	.04	.02	1.00
III	No.	51	30	3	2	86
	%	.59	.35	.03	.01	1.00
Total	No.	221	86	15	23	345
	%	.66	.23	.05	.06	1.00

the diametric opposite is the case with the former—where 65% are outside Western Faizabad. Their *average* marriage is approximately forty miles, well beyond the local region and, in point of actual fact, usually outside the District entirely.

Paramount status in the local hierarchy of caste is, then, expressed in a distinctively wide range of spatial mobility in marriage. For this group, both the confinements of the local area and the District frontiers fail to be operative, as far as marriages are concerned. This conforms with the functional roles and historical positions attained by the Brahmans and Rajputs respectively. The former have been ritually and the latter secularly dominant in the region for at least four centuries. Even during Mohammedan times it was so because the nature of their rule was, like the British after them, to administer through local authority which had been duly subordinated (by force where necessary) to their interests. As long as such groups conformed, their rights in property and ceremonial status were left intact.

The cultural and political integration of these Grouping I castes are definitely more extended than are the other two groupings. Rajputs were conquerors who

came in large military bodies, took control of the region, and set themselves up as rulers. Agnatic clans were the basic units of Rajput military organization and the spoils of war were consequently disbursed among them, usually in the form of assignments of certain numbers of villages to each. Sherupur's local region came under the possession of the Surajbans clan through the cunning of a one Lalji Singh who was a subordinate of an earlier local ruler named Banda Sah. When

TABLE 2

Some population features of Sherupur

Castes	*No. of families*	*General occupational functions*
Brahman	4	Agriculturalists
Thakur	9	Agriculturalists
Murau	3	Vegetable growing
Ahir	45	Cultivators and herders
Kurmi	25	Cultivators
Sonar	1	Goldsmith
Lohar	2	Blacksmith
Nai	1	Barber
Kori	15	Agricultural laborer
Teli	1	Oil presser
Gadariya	2	Goat herder
Muslim	3	Tailor and cultivator
Chamar	3	Leatherworker and cultivator
Total	115	

the latter died without issue, Lalji was able somehow to seize control of his property. Originally this embraced 97 villages; in the 1920's his descendants were still dominant in 51 villages;[19] today it is not certain how far the clan's economic power extends, other than to observe that it is still widely in evidence in Sherupur and its environs. At any rate, the clan's relations were historically with other clans with which they were interlinked by kinship and political obligations over a great area, and this was expressed in the giving and taking of daughters between them. In other words, their superior status, based upon an extra-local integration of political and economic power, was, and is, expressed in terms of the privilege of practicing wide spatial mobility.

The same basic pattern has prevailed for the Brahmans, although apparently

19 District Gazetteers, 1928.

not quite so extensively (average marriage: 23 miles). An important difference is the fact that their intermarrying *gotras* symbolize the interest in perpetuating power not so much in its secular forms as in its ritual and intellectual forms. Both castes are status paragons in the immediately local area because to a very high degree the base of their power and prestige lie beyond it. It is this wider integration of their caste structure which has enabled them to enforce their secular and ritual pretensions vis a vis subordinate castes who lack such wider integration and are, therefore, entirely dependent on the system of ritual and occupational interaction which contains them as a narrow segment and which, therefore, they are powerless to transcend. The latter is attested by the fact that modern caste groups, using the liberal decrees and the technical facilities of the secular state as their wedge, frequently endeavor to raise their social and ritual status by attempting to widen the spatial dimensions of their integration. In this way they are able to meet the wide power base of the ritually high castes with a degree of horizontal organization which, because transcending local insulation and segmentation, enables them to make and to resist demands in their interests with a firmer voice. Needless to say, such changes weaken the local vertical integration of caste and strike a blow at its continuation as a system of occupationally and ritually differentiated relationships.

The gradient of decline in spatial extent of marriage with descent in the status system is not altogether consistent, however. The Grouping II cultivators marry closer-in than do the Grouping III artisan-laborer castes, despite the somewhat superior status and condition of the former. If taken on its face, this would mean that in Miller's terms the lowest grouping of castes is more mobile and therefore higher in status than its "cleaner" compatriots. There is no absolutely certain explanation for this phenomenon, but there is a *possible* one whose eventual verification will have to await further research. It is this: The artisan-laborer castes are numerically smaller than are the Ahirs and Kurmis throughout Western Faizabad. Thus, although lower in status, there are available to them in the surrounding region fewer objects of matrimony than there are for Grouping II castes (with the exception of the Muraus who are also few in number and whose marital radius, interestingly enough, is 10.2 miles as compared with 6.4 miles for Kurmi and Ahirs). Discovering a suitable spouse may be simply more difficult for them. In the last analysis, therefore, their wide extension of marital ties may not necessarily have any status implications at all.

V

Another fact revealed by the data is that daughters' "affinal villages" are closer to Sherupur than are those of sons. As a prelude to exploring this matter, we should

recall that north Indian kinship organization is founded upon agnatic descent. Family groups consist, therefore, of male lineal kin, their spouses, sons, and unwed daughters. *Gotra* and village exogamy means that daughters are married off by puberty and sent to live permanently in their husbands' villages while daughters-in-law are brought in from the outside. Statistics from Sherupur suggest that the daughter-in-law is gotten from a village whose average distance is 10.9 miles whereas a daughter is sent as a bride to a village whose average distance is 8.4 miles.

At first it was thought that this pattern could be explained in terms of "religious orthodoxy" and the general superiority of status accorded to men as compared

TABLE 3

Distance of marriage of daughters and sons, by caste grouping

Grouping of castes	*Daughters*	*Mileage Sums*	*Sons*	*Mileage Sums*	*Average Daughter*	*Average Sons*	*Total Average District*
I	8	223	12	527	27.9	43.9	37.5
II	38	202	82	568	5.3	6.9	6.4
III	19	113	30	263	5.9	8.8	7.5
Total	65	538	124	1358	8.4	10.9	10.5

with women in Indian society. That is, it was thought that sons are married farther away because consciously or unconsciously villagers expressed in this manner the greater ritual and social importance of their sons to the kin group. The reasoning was that given the association of exogamy with ritual purity, and given the social and religious emphasis on sons over daughters, a more distant marriage for a son would be sought as a mark of his superior status.

To check this hypothesis, the distance of the affinal villages of elder and younger sons respectively was averaged for families who had two or more married sons. There were a total of 27 married elder sons who among them possessed 40 married younger brothers. The assumption was that if the status factor were operative it would be revealed in the form of differential distance of elder and younger sons' marriages, since the former is regarded as the inheritor of the primary ritual and social obligations of the agnatic kin group.

The hypothesis was disproved. Younger sons and elder sons do not obtain their brides from significantly different distances. The answer lay elsewhere.

Subsequently it was realized that the difference in average distance of sons' and daughters' "affinal villages" arises out of the possibility of controlling the

location of a daughter's marriage to a much higher degree than the distance of a son's marriage can be controlled. The fact that, being subject to a measure of conscious control, the daughter's marriage is wherever possible arranged with a comparatively nearby family reflects certain culturally patterned features of (a) the daughter's position in the kin group and (b) the status problems concerning her marriage.

The reason why it is the daughter rather than the son whose affinal household can be spatially controlled is that there is a surplus of males in the rural area. If the sex ratio were equal there could be no difference between sons and daughters in the matter of their marital distribution on any other basis than chance, unless there were some cultural factor which was consistently creating a great differential in marital prospects for the two sexes (a factor whose existence cannot be demonstrated for rural north India). But in Sherupur the sex ratio is 1667 males per 1000 females, or three males for every two females—a condition compatible with what Indian censuses have shown to be general for many generations.

The tendency to prefer sons, because ritually and socially more useful to the family, to daughters, who lack ritual importance and who must be "lost" to the family at marriage due to "village exogamy," accounts for the observed sex ratio. Survival chances are higher for sons because whenever a reason arises for conferring differential amounts of care and protection to male and female children (and in a subsistence economy such reasons arise comparatively frequently), it is normally the male who is chosen to receive the beneficial share of this apportionment of favor. The result is a surplus of males which, interestingly enough, increases anxieties about successfully fulfilling the religious mandate to marry off sons in order to assure perpetuation of the agnatic line.

This result in turn makes the choosing of spouses for sons subject to less "rational" control. Much more is the son's "affinal village" a result of the sheer good fortune of locating a bride who conforms to the status specifications of the caste. Even if, for example, there were a *desire* to marry an elder son farther away, it could not be fulfilled very often because the degree of selectivity necessary to facilitate such a choice would be lacking. This tendency seems to be especially marked for Group III castes where the search for suitable brides is further aggravated by the already noted general sparsity in the number of members of such castes. For it can be seen in Table 2 that most of the difference in distance of average marriages between groupings II and III are accounted for by the differential between sons' marriages (nearly two miles) and not by daughters' (only about half a mile). This is where the major difference *should* lie if the thesis of this study is correct; for, since the surplus of males is a constant in the social

order, castes who are additionally less numerous in their membership should have to range even more widely in search of brides (all other things being equal) than castes whose membership is more numerous.

The first reason given for the apparent desire to marry the daughter as near to her parental home as possible, and yet consistent with exogamous regulations, was her particular position in her kin group. She must leave her family of orientation at marriage. It is therefore traditional for a girl to make periodic visits to her *nanihal* ("mother's house") on festival occasions and when she is expecting a child. Obviously, the closer she is to her home village, the more feasible is the maintenance of such ties. Notes Madan in this connection:

> . . . generally speaking, [Kashmiri] Pandits of a village prefer to give and receive women, in marriage, from nearby villages in order to maintain contacts with married female agnates and facilitate mutual visiting.[20]

Status considerations are also involved in the choosing of close-in marriages. Motives for trying to marry a daughter far away are automatically suspect. It is thought that one only does this if she suffers "defects" (ugliness, deformity, mental imbalance) which would make the girl unacceptable as a spouse to families in the local area who presumably would know about them. This insecurity reflects something else that is important in this regard about which Miller has aptly commented:

> . . . the cultural uniformity of the various castes was closely related to the lines of territorial segmentation. Among the Nambudiries there was a largely uniform body of custom throughout Kerala . . . while among the Depressed castes, even today, there may be obvious variations of ornamentation . . . between one village and the next. Such distinctions tended to be expressed in terms of rank. . . . This in turn made intermarrying impossible. Territorial segmentation thus over-rode the uniformity of castes over a wide area.[21]

We might say then that it is also "safer" to marry the daughter within the local area, for to go beyond means entering an "outside" region where one is less sure of the credentials of a possible spouse because it is automatic to think of outsiders of one's own caste in hierarchical terms. The problem is greater for a daughter than for a son. Children inherit the status of the father. This is the basis of hypergamy wherein a high dowry may be accepted in exchange for the opportunity to allow a family of lower ritual status than one's own to marry their daughter into your family. Thus, in the area beyond the local territorial segment,

20 Madan, 1959, p. 169.

21 Miller, 1954, p. 416.

there are fewer unfavorable consequences to be anticipated from making a "status mistake" or a deliberate down-marriage in the case of a son than in the case of a daughter.

There is one respect in which the marriage of sons and daughters in Sherupur seems not to conform with expectations which other studies have engendered. This is the alleged tendency for daughters' "affinal villages" to be geographically distinct in their location from sons'. Speaking of an area in western Uttar Pradesh, Dube (1958) declares:

> . . . in this region . . . the people of one area (a more or less well-defined group of villages) will marry their girls in another area, and bring wives for their boys from still another area. Thus persons in region A will give their daughters in marriage to residents of region B, and will seek brides for their sons from region C. The boundaries of these exogamous regions have been defined by long traditions.[22]

It can be said that Sherupur, located in eastern Uttar Pradesh, shows no traces whatsoever of such a pattern. This suggests the need for some comparative studies of "village exogamy" and territorial segmentation with the aim of learning more about the character of and reasons for variations that occur between and within different regions.

VI

In this paper, the spatial distribution of marriages undertaken by citizens of Sherupur have been shown to reveal rather clearly the factor of local territorial segmentation thought by Miller and Pocock (and Bouglé) to be an essential precondition for a system of caste relationships. Within this local area, in Sherupur's case embracing four of the five *parganas* comprising what has been called Western Faizabed, nearly all of the intercaste and intracaste economic *(jajmanpurjan)*, political *(panchayat)*, factional, and intimate personal relations conducted by Sherupur's populace are to be found. This area is confined enough to make it possible for the Brahmans resident within it to function realistically as the ritual paragons in terms of which the hierarchical arrangements of all other caste groups can be maintained.

At the same time, it has also been established that differential status does indeed, as Miller has suggested, mean differential range of spatial mobility, if marriage is any criterion. The Group I castes are thoroughly different in their marriage mobility from the two groupings of *gotra*-less castes beneath them. However, the tendency for Group III castes' marriages to be somewhat more distant than Group

22 Dube, 1958, p. 30.

II castes' is a finding unanticipated on the basis of Miller's work, but is probably explained by the numerical smallness of the castes in the former grouping. If true, this variation would not necessarily refute the notion of a gradient of spatial mobility consistent with caste hierarchy.

Finally, we have seen that marriages vary in distance in relation to the spouse's sex—that is, daughters' "affinal villages" are closer to their home villages than are sons'. This is explained by the fact that males outnumber females in the rural area (by a ratio of 3:2 in Sherupur). This makes it possible for families to control the distance of their daughter's marriage to a much greater degree than they control the distance of the son's marriage. Having a measure of choice over where the daughter goes upon marriage, parents tend to keep their daughters as near as possible because this facilitates frequent visiting, which is regarded as highly desirable by both parents and daughter. It also means easier determination of the groom's status and thus more ready avoidance of "mistakes" in matches, since territorial segmentation results in groups beyond the local segment being thought of in hierarchical terms. Finally, close-in marriages avoid the suspicion that a daughter is being gotten rid of due to "defects" in her.

The data from this study of Sherupur in eastern Uttar Pradesh fail to substantiate the observation made elsewhere that daughters are married into different locales from whence sons' brides are taken.

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LUCKNOW UNIVERSITY
LUCKNOW, INDIA

HYPERODONTIA IN PREHISTORIC SOUTHWEST INDIANS*

RICHARD G. SNYDER

VARIATIONS of unusual occurrence in the human dentition may generally be classified into five groups: hyperodontia, hypodontia (or congenital absence of teeth), gemmate or twinned teeth, and unusual forms of crowns and roots. These anomalies are of interest because of the possible genetic implications for familial and population studies. Although the genetics of the human dentition are as yet poorly understood, hyperodontia is one trait which has been shown to be hereditary.[1]

Hyperodontia, or supernumerary teeth, are additional teeth beyond the normal number found in man. They most often consist of a third maxillary central incisor, a second maxillary canine, a third premolar, or a fourth molar tooth. However, any tooth in the dentition may have a supernumerary tooth associated with it.[2] These extra teeth in man are most frequently observed at the anterior or posterior end of the molar series, but have been found at almost any point within the dentition. Numerical variation is either unilateral or bilateral. Extra teeth may take diverse forms as well as appearing normal, and occasionally an extra molarform tooth will be found in the maxillary incisor group. Peg-shape, or conical, and miniature variations also appear. As was indicated by Hall's study of 6017 animal teeth of the orders Insectivora and Carnivora, supernumerary teeth in other mammals appear to be rarer than in man.[2a] However, in primate skulls Colyer has found 147 supernumerary teeth out of 11,042 for an incidence of 1.3 percent.[2b] Contrary to the location of extra teeth in man, hyperodontia in animals is most frequently found in the premolar, molar, or incisor series, and canines, in this order.

The presence of supernumerary teeth in the human dentition has been interpreted by some investigators in both the fields of comparative morphology and odontology as evidence of reversion, or atavism. Early investigators of the last century often attempted to explain all cases of hyperodontia as reversions to the

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1 Lasker, 1950; Tratman, 1950; Keeler, 1935; Birdsell, 1950.

2 Diamond, 1952; Stafne, 1932.

2a Hall, 1940.

2b Colyer, 1936.

more primitive conditions found in ancestral forms. Still others accepted the atavism theory as an explanation for some teeth, but rejected it for others.

Probably the best argument against the classification of the irregularities and anomalies of the dentition as due to the recurrence of ancestral conditions in a species, or atavism, was stated by Osburn.[3] Osburn noted that atavism did not explain all cases since certain anomalies or anomalous teeth are found which may not appear as in ancestral form, that sometimes partially divided teeth are discovered, and that still a third difference lies in the fact that teeth may be omitted from the series as well as added to it. Osburn's argument was lent considerable weight by the earlier work of Bateson.[4] The latter studied the skulls of over 3000 lower mammals to collect data on variations in teeth. His work clearly rejected the reversion theory, and supplied the most generally accepted theory in evolutionary morphology. Bateson's evidence on this point showed that the palaeontological record of the evolution of teeth demonstrated that a third premolar, a third incisor, or a fourth molar in man could only be accounted for by a reversion covering such a long period of time that this alone would be sufficient to render the theory untenable in the light of our modern knowledge of heredity. A second cuspid in man could not be claimed to be atavistic since there is no ancestral condition to which it could revert. Bateson also noted that supernumerary teeth are often difficult to separate by position, thus determination of which tooth is the supernumerary one may be a problem.

There have been, of course, other explanations offered in regard to this phenomenon of extra teeth. Black,[5] through extensive embryological investigation, hypothesized that supernumeraries are produced by germs budding off from the dental lamina. Thus normal extra teeth, called by Bateson "duplicate teeth," are explained by Black as originating from accessory strands of cells which arise from the dental lamina, and which give rise to enamel organs.

MATERIAL AND METHOD

The odontological material considered in this study consisted of 200 Point of Pines Indians who lived in east central Arizona from AD 1250-1450, and 150 prehistoric Indians of between AD 1150 and 1250.[6] The earlier group represented Tularosa-Reverse Phase individuals who were excavated from five sites: Jewett Gap, Higgins Flat, and Apache Creek, New Mexico, and Turkey Creek and Arizona W:10:37, Arizona. The later group was composed of individuals from Point of Pines Ruin, Arizona W:10:51, and Arizona W:10:52, located on the

3 Osburn, 1912.
4 Bateson, 1894.
5 Black, 1909.
6 Snyder, 1959.

present San Carlos Apache Reservation. Some 658 deciduous teeth and 3019 permanent teeth from the 350 individuals of this population were examined.

In this population five cases of supernumerary teeth were observed. All of these have been rarely reported in the literature for American Indian groups. Dental X-rays were utilized as an aid in determining accurate position information and in checking each diagnosis. Since it was not feasible to X-ray all of the dentitions it is possible that non-erupted supernumerary teeth may not have been detected in all cases. The supernumerary teeth found consisted of three cases of extra maxillary central incisors, one case of extra premolars, and one instance of a 4th molar tooth.

INCISOR TEETH

The initial case of supernumerary incisors was observed in a Turkey Creek Pueblo female of about 26 years of age, who had the alveolus of an erupted supernumerary right maxillary central incisor. The supernumerary tooth was lost *post mortem*. Both central right and left incisors and lateral right incisor were also lost *post mortem*. The socket is slightly shallower than the normal left and right central incisor sockets. This tooth had displaced the right lateral incisor distally and slightly anterior to its normal position. No malocclusion was observed. It is interesting to note that this individual was apparently killed by penetration of the 6th thoracic vertebra by a projectile point, which was still in place when she was excavated nearly 800 years later.

In a second case, from Jewett Gap Pueblo, a female of approximately 18 years of age was found to have an extra alveolus anterior to the left central maxillary incisor. The central and lateral incisors were also lost after death.

The third case of supernumerary incisors was observed in a Point of Pines male of about 22 years of age. In this case there were supernumerary non-erupted maxillary central incisors (a third set), which showed up well in X-rays.

Instances of maxillary supernumerary incisors have been previously reported in widely dispersed populations and appear to be nearly as rare as other types of hyperodontia. In Southwest Indian groups only a few instances have been reported, although undoubtably cases have been found and not reported, and other skeletal material might not have been examined for this anomaly. Leigh[7] found two instances of supernumerary teeth between the upper central incisors in a study of 113 Havikuh Zuñi; Reed[8] reported one case lingual to an upper central incisor in one of 24 individuals from the prehistoric pueblo of Te'ewi (AD 1250-1500) in the Chama valley, New Mexico, and sent the author the mandible of a second

7 Leigh, 1925.

8 Reed, 1953.

6 month (± 1 mo.) old child having the alveoli of both supernumerary central incisors (probably erupted) and lateral incisors (probably non-erupted) (although of prehistoric origin, unfortunately it is of unknown geographical or temporal provenience). Four cases of supernumerary incisors were found in 253 Pecos Pueblo individuals, although Nelsen[9] found only one case in his study of 172 of these Indians. In addition, Reed[10] has found one case from a highway salvage project of the Museum of New Mexico carried out in the Galisteo Basin, south of Santa Fe.

Supernumerary teeth appearing in the incisor group are also unusual in other American Indian populations. Among prehistoric groups, for example, Leigh, and later Rabkin[11] found no supernumerary teeth out of a group of 66 Indian Knoll, Kentucky, Indians, although "several" out of 1200 skeletons are noted by Snow.[12] Leigh[13] has reported two cases among 129 Arikara Indians and found four instances of supernumerary incisal elements in 900 pre-Spanish Peruvians examined. Other studies throughout the world confirm the low incidence of this trait. Out of some 3,946 Greenland Eskimos studied, Pedersen[14] found only 21 cases. In modern White Americans Stafne[15] found only 180 individuals who could boast of ownership of an extra upper central incisor.

PREMOLAR TEETH

The situation in regard to the premolar series is similar. One case of bilateral supernumerary maxillary second premolars, and a single supernumerary first premolar, was found in a 23 year old Point of Pines male. This results in a dentition of 35 teeth, although the mandibular molars were lost about two years prior to death. To my knowledge, this particular combination has not been reported previously. Reed,[10] in the prehistoric Te'ewi Indians, found one case of a supernumerary mandibular premolar. Pedersen[14] found two supernumerary mandibular premolars in a West Eskimo hunter from Nanortalik, which occluded with two maxillary distomolars, resulting in 36 erupted teeth. Dr Tweed of the Tweed Foundation for Orthodontic Research, has given the author the mandibular cast of a Tucson Negro youth who had bilateral eruption of supernumerary first and second premolars. In yet a third instance, Stafne[15] reported a case in which the individual had four premolars on one side, and in another individual four premolars were observed on one side and three on the other.

9 Nelsen, 1938.
10 E. Reed, personal communications, May-August 1960.
11 Rabkin, 1943.
12 Snow, 1948.
13 Leigh, 1925; 1937.
14 Pedersen, 1949.
15 Stafne, 1932.

Although in such cases it is often difficult to determine which teeth are the supernumeraries and which are the normal teeth, in the Point of Pines individuals the extra teeth are located in a more buccal position than is normal, and are also slightly smaller in size.

FOURTH MOLAR TEETH

One case of a fourth molar tooth was found in an adolescent male from Point of Pines Ruin (Arizona W:10:50). This consists of a non-erupted right fourth molar tooth, located slightly buccal and anterior to the third molar, which has not erupted because it is impacted by superposition of the fourth molar. This is of a type called "diminutive" by Hrdlička.[16] Since it is not lateral to the third molar it is not a true paramolar. It measures 6.5 mm mesio-distally, and 6.1 mm in diameter bucco-linguially.

Most early writers considered a fourth molar in man as a distinct atavism. However, this theory may be easily dispelled by the fact that no known recent nor fossil primate has possessed more than three molar teeth normally. Bolk[17] proposed a "terminal reduction theory" to circumvent this objection, considering the fourth molar as due to reversion, but relating it to the third molar tooth in some American monkeys. Thus he tried to derive the dentition of the New World monkeys of the family Cebidae (which have 3 molars and 3 premolars) by claiming that the third premolar had taken on the form of a molar, and that the third molar is lost, to reappear occasionally as a supernumerary fourth molar. But this must be classed as pure speculation, since no evidence for this exists. The palaeontologist Schlosser theorized that the fourth molar tooth in man represents the last deciduous tooth of the Placentalia, held back and displaced, and sometimes re-occuring as a supernumerary fourth molar.

Such views concerning the evolutionary phylogenetic significance of the supernumerary tooth have been rejected by most contemporary authorities. The genetic basis for the appearance of the fourth molar tooth has been discussed by Birdsell[18] who notes two extreme viewpoints. On the one hand, if one hypothesizes that phenotypic expression (considering cusp numbers, size, and site, for example) is in each a primary expression of separate genes, then the occurrence of this tooth would be a result of multi-allelic series or possibly even multifactorial. In this case it may be pointed out that there would be no genetic basis to explain such divergences as bilateral expression and either a left or right unilateral expression. On the other hand, occurrence of all the variations of the fourth molar tooth could be

16 Hrdlička, 1916.
17 Bolk, 1914.
18 Birdsell, 1950.

due solely to the variable expressiveness of a single gene. Thus such dental expressions could be determined by genes which influence complex biochemical physiological growth interactions, rather than being caused by genes producing specific localized expression in the phenotype. Birdsell prefers the latter explanation, although in any case there is as yet no evidence to demonstrate its mode of inheritance.

Fourth molar teeth are rarely found in man, so the finding of even one case among such a relatively small sample is of considerable interest. In regard to American Indian groups, only two previous instances of a fourth molar have been reported. Hrdlička[16] found one fourth molar in a Delaware Indian, and Leigh[13] reported observing one in a Sioux Indian. Three others have been found in Eskimo populations studied: Sundewall[19] in a West Greenland Eskimo, and Pedersen[20] observed two West Greenland skulls with small maxillary fourth molars. Montelius[21] found two cases in Chinese. Undoubtedly fourth molars have been reported in other Mongoloid populations; however, the author has found no others in the literature.[22] It should also be pointed out that in general X-ray methods have not been utilized extensively in past studies, and it seems probable that occurrences of non-erupted supernumerary teeth have been missed in visual examination.

Evidence appears to indicate that fourth molar teeth have a variable incidence in human populations, which has not been shown to be the case for other types of supernumerary teeth. The occurrence of this anomalous expression has been more extensively reported in non-Mongoloid racial groups. Fourth molar teeth occur with greater frequency in Bushmen and Negroes than in Whites or Mongoloids,[23] and Birdsell has found that Australian Aborigines show a frequency of this trait in crania of between 1 and 2 percent, "the highest racial frequency for this trait." Interestingly enough, Birdsell has also reported discovering what is to the author's knowledge the only reported instance of a 5th molar tooth. In some eleven studies of this character, a total of only 44 definite occurrences of the fourth molar in over 63,000 subjects has been found. There is as yet no valid indication however, despite the variable incidence found in various studies, as to significant racial frequency of the occurrence of the fourth molar tooth. The frequency as reported in a few Indian and Eskimo populations indicates that it may be much lower than that found in Whites, and if so the prehistoric Point of Pines Indians are unique in having a relatively high frequency of this character. More precise comparative data from other groups is obviously needed.

19 Sundewall, 1871 (as reported by Pedersen).
20 Pedersen, 1940.
21 Montelius, 1932.
22 Suzuki and Sakai, 1955; Nikityuk, 1960.
23 Lasker and Lee, 1957; Kiernberger, 1955; Birdsell, 1950; Klatsky, 1956.

The occurrence of the supernumerary tooth of all types reported for various human populations demonstrates that the Point of Pines Indians, with an incidence of 1.4 percent, are intermediate between quite diverse groups (Tables 1 and 2). The Arikara Indians of Oklahoma, with four cases of hyperodontia out of 129 individuals examined (3.1 percent incidence) appear to have not only the largest incidence previously reported for all Indian groups, but for all other populations

TABLE 1

A comparison of the incidence of reported supernumerary teeth in prehistoric Southwest Indians

Group	*No. of individuals*	*Supernumerary teeth*			*Source*
		Teeth	*Indiv.*	*%*	
Point of Pines	350	8	5	1.4	Present study
Turkey Creek Pueblo	73*	1	1	1.4	Present study
Jewett Gap Pueblo	13	1	1	7.7	Present study
Pecos Pueblo	172**	1	1	.6	Nelsen, 1938
Te'ewe	40**	2	2	5.0	Reed, 1953
Totals	648	13	10	1.5	

* An additional 177 more individuals are currently under study.

** Approximate.

Two additional cases have been found by Reed in isolated prehistoric New Mexico Indians of unknown origin.

studied as well. However, the Tularosa Phase Jewett Gap Indians of this study, with 1 case out of 13 individuals, an incidence of 7.7 percent, have the greatest relative occurrence. This is significantly greater than would be expected by chance, but represents too small a sample to warrant further conclusions.

SUMMARY

In summary, the dental trait of hyperodontia (supernumerary teeth) has been shown to have a varied incidence among diverse populations. All studies, and particularly those concerned with Southwest Indian groups, have reported such a low incidence that extra teeth in man must still be regarded as a "rare" condition. Eight new instances of supernumerary teeth are described for five prehistoric Southwest Indians, and previously reported occurrences of this anomaly in the Southwest are reviewed.

TABLE 2

A comparison of the occurrence of reported supernumerary teeth in various populations

Group	Total no. individuals	Supernumerary teeth No. of Indv.	%	Source
Delaware (Lenape)	57	1	.2	Hrdlička, 1916
Indian Knoll (prehistoric)	66	0	.0	Leigh, 1925; Rabkin, 1943
Sioux	92	1	1.1	Leigh, 1925
Arikara	129	4	3.1	Leigh, 1925
Havikuh Zuñi	113	2	1.8	Leigh, 1925
Point of Pines (prehistoric)	350	5	1.4	Snyder, 1960
Pre-Spanish Peruvians	900	5	.6	Leigh, 1937
E. Greenland Eskimo (crania)	52	1	1.9	Pedersen, 1949
Modern E. Greenland Eskimo	702	7	1.0	Pedersen, 1949
Modern Angmagssalik Eskimo	130	3	2.3	Pedersen, 1949
West Greenland Eskimo (mixed)	1456	12	.8	Pedersen and Hinch, 1939
American Eskimo (crania)	325	7	2.2	Leigh, 1925
Modern Chinese	3063	14	.4	Montelius, 1934
Singapore Chinese	2863	23	.9	Tratman and Chiam, 1941; Tratman, 1940
Japanese	2600	10	.4	Saito et al., 1949
Malay and Javanese (Singapore)	637	4	.6	Tratman, 1941; 1950
West Malay and Javanese	1370	26	1.9	Tratman, 1941; 1950
Indian (Singapore)	657	6	.9	Tratman, 1941; 1950
Australian Aborigines (crania)	—	16	1.0-2.0	Birdsell, 1950
Australian Aborigines (living)	900	8	.9	Birdsell, 1950
Australian Aborigines (crania)	600	5	.8	Campbell, 1925
European and American Whites	1954	3	.2	Montelius, 1932
White North Americans	48550	441	.9	Stafne, 1932
Swiss (Berne) children	10000	32	.3	Dolder, 1936; Pedersen, 1949
Philadelphia children	1000	16	1.6	Werther, 1939; Pedersen, 1949
English school children	5717	7	.1	Hall, 1936; Tratman, 1950
English school children	4000	12	.3	MacPhee, 1935; Tratman, 1950
English school children	8500	33	.4	Tinn, 1940; Tratman, 1950

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